

Initial Forest Plan Components

Santa Fe National Forest

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1 Vegetation - Ecological Response Units (ERUs)

Description

The Santa Fe NF comprises a broad range of ecological components, including a diversity of vegetation systems, ranging along elevational gradients from prairie grasslands to alpine tundra. Eleven upland vegetation types (ERUs) exist in large enough quantities on the Forest to have specific plan components. These vegetation types, described using Ecological Response Units (ERUs), the Santa Fe NF contains relatively large proportions of those ERUs and the species who rely on them for habitat.

For All Vegetation Types (ERUs)

Desired Conditions

1. Ecosystems maintain all of their essential components (e.g., plant density, species composition, structure, coarse woody debris, and snags), processes (e.g., disturbance and regeneration), and functions (e.g., nutrient cycling, water infiltration, and carbon sequestration).
 - a. Ecosystems contain a mosaic of diverse native plants (e.g., composition and genetic diversity) with vegetative structural diversity that encourages vigor, connectivity and persistence at a variety of scales across the landscape, reflecting their natural disturbance regimes.
 - b. Native plant communities dominate the landscape, while invasive species are nonexistent or low in abundance and do not disrupt ecological functioning.
 - c. Natural ecological cycles (e.g., hydrologic, energy, nutrient) facilitate the shifting of plant communities, structure, and ages over time due to natural ecological processes affecting site conditions (e.g., fire, climate fluctuations).
 - d. Vegetation structural diversity and forest floor fuel loadings support native insect and disease populations within their range of natural variability.
 - e. Vegetative cover and litter are distributed across the soil surface in adequate amounts to limit erosion and contribute to soil deposition and development. Soil cover and herbaceous vegetation protect soil, facilitate moisture infiltration, and contribute to plant and animal diversity and ecosystem function.
2. Ecosystems are productive, sustainable, resilient, and adaptive to disturbances and provide goods and services over the long-term despite changing and uncertain future environmental conditions.
 - a. The composition, structure, and function of vegetative conditions are resilient to the frequency, extent, severity of disturbances, and to climate variability.
 - b. Vegetative communities reflect their natural physical, chemical, and biophysical processes with carefully managed human influence.
 - c. Non-climate ecosystem stressors (e.g., high road densities, water depletions, air and water pollution) do not significantly impact the resilience and resistance of an ecosystem's ability to adapt to a changing climate.
 - d. A diversity of vegetation exists with a mosaic of cover types and stand structures forming a healthy, resilient landscape that provide for genetic exchange, daily and seasonal movements of animals, and predator-prey interactions across multiple spatial scales, consistent with existing landforms and topography.

- e. Natural disturbance regimes, including fire, are allowed to function in their natural ecological role. Uncharacteristic fire (frequency and severity outside historical range for associated vegetation type) is minimal or absent on the landscape.
- f. Landscape vegetation structure and patterns create a mosaic that disrupts large continuous areas of uncharacteristic high-severity fire effects.
- g. Healthy, resilient vegetation contribute to the forest's ability to store carbon and function as a sustainable carbon sink.
- h. Vegetation provides a sustainable supply of forest products, such as firewood, piñon nuts, vigas and latillas, and forage, consistent with desired conditions for other resources.

Guidelines

1. Management activities should favor the retention of species that naturally occurred in those ecosystems.

Management Approaches

1. Strive to conduct management actions that replicate natural disturbance regimes.

1.1 Spruce Fir

Description

The Spruce-Fir forest vegetation community generally occurs at elevations ranging from approximately 9,500 to 11,500 feet. It is often dominated by Engelmann spruce, but contains other species depending on elevation. Spruce-fir forests occur on the coldest and highest elevation sites on the Forest with the most precipitation. This forest vegetation community can be subdivided into lower elevation (spruce fir mix) and upper elevation (subalpine spruce-fir) spruce-fir types, with differing fire regimes and subdominant species composition. The lower spruce-fir type typically occurs between 9,500 and 10,500 feet in elevation, while the upper spruce-fir type typically occurs between 10,500 and about 11,500 feet in elevation and is bounded, where present, by the alpine tundra vegetation above 11,500 feet.

Lower elevation spruce-fir resembles wet mixed conifer with a different composition of tree species, due to relatively warmer, drier conditions, and is a transition zone between wet mixed conifer and the upper elevation spruce-fir forest type. In the lower type, common seral tree species are aspen, Douglas-fir, white fir, and Southwestern white or limber pine. Climax forest is dominated by Engelmann spruce, white fir and occasionally blue spruce. Subdominant species may include corkbark (subalpine fir), white fir, and bristlecone pine. In the upper type, dominant tree species are Engelmann spruce and corkbark fir (subalpine fir). Patches of aspen are occasionally present, but aspen is typically incidental or co-dominant.

Spruce Fir – Landscape (>1000 ac)

Desired Conditions

1. Spruce-fir forests display variable stand structures and species composition, but most spruce-fir forests are dense with closed canopies and multiple canopy layers composed predominantly of vigorous trees, but older declining trees are a component.
 - a. The Spruce-Fir Forest vegetation community is composed of multiple species of varying ages in a mosaic of seral stages and structures. Its arrangement on the landscape is similar to historic patterns, with groups and patches of variably-sized and aged trees and other vegetation.
 - i. Engelmann spruce is generally dominant; subalpine (or corkbark) fir makes up a lesser, but common, component. Bristlecone pine, limber pine, aspen, white fir, or Douglas-fir are infrequent to rare and usually found on warmer, drier aspects.
 - ii. The understory consisting of native grass, forbs, and/or shrubs is present and commonly includes currants, maples, honeysuckle, common juniper, huckleberry (*Vaccinium spp.*), alpine clover, and sedges.
 - b. Tree canopies are generally more closed than in mixed conifer forests.
 - c. Patches of spruce-fir forest, are mostly in the hundreds of acres with rare patches in the thousands of acres as a result of rare disturbances.
 - d. Snags and coarse woody debris (on the ground) are abundant in most development stages.
 - e. Old growth generally occurs over large areas as stands or forests and provide snags, top-killed, lightning- and fire-scarred trees, and coarse woody debris, all well-distributed throughout the landscape. Old growth components include old trees, dead trees (snags), downed wood (coarse woody debris) and structural diversity.
2. Vegetative conditions (composition, structure, and function) are broadly resilient to disturbances of varying frequency, extent, and severity. The forest landscape is a functioning ecosystem that contains all its components, processes, and conditions that result from endemic levels of disturbances (e.g. insects, diseases, fire, and wind), including old trees, downed logs, and snags.
 - a. High-intensity, stand-replacement fires occur in most spruce-fir forests with frequencies longer than 200 years but vary with elevation. In the lower spruce-fir type, mixed-severity fires (Fire Regime III) infrequently occur. In the upper spruce-fir type, high severity fires (Fire Regime IV and V) occur very infrequently. Most fires are of limited scale and variable intensity. Due to the presence of ladder fuels, fires usually burn either with low intensity, smoldering combustion, or transition rapidly in the canopy as passive or active crown fire.
 - b. Isolated instances of insect and disease infestations (e.g., Douglas-Fir Tussock Moth, Tent Caterpillar) occur at endemic levels (frequent small-scale) and do not affect the ecological function or sustainability of Spruce Fir.
 - c. Organic ground cover and herbaceous vegetation provide protection of soil, moisture infiltration, and contribute to plant and animal diversity and to ecosystem function.

Spruce Fir – Midscale (10 – 1,000 ac)

Desired Conditions

1. Basal area ranges from 20 to 250 square feet per acre based upon age and site productivity, and depending upon disturbance and seral stages of the groups and patches. Basal area can be greater than 250 square feet per acre in late successional stages.
2. Following major disturbances grass-forb-shrub interspaces may comprise the entire mid-scale area (up to 1,000 ac) or contain single trees. Aspen is occasionally present in large patches.
3. Snags, 18 inches or greater at diameter breast height (DBH), range from 5 to greater than 30 snags per acre depending on seral stage but average around 9 snags per acre. Lower ranges of snags are associated with early seral stages and upper ranges associated with late seral stages. Density of snags greater than 8 inches DBH ranges from 13 to 30 with an average of 25 snags per acre.
4. Averages of coarse woody debris, including downed logs, vary by seral stage and range from 5 to 30 tons per acre for early-seral stages; 30 to 50 tons per acre for mid-seral stages; and 40 tons per acre or greater for late-seral stages.
5. Ground cover consists of shrubs, perennial grasses, and forbs with basal vegetation cover values ranging between 5 and 20 percent depending on the Terrestrial Ecological Unit (TEU).

Spruce Fir – Fine Scale (<10 ac)

1. Trees are generally of the same height and age in early group or patch development but may be multilayered in late development.
2. In mid-aged and older forests, trees grow tightly together with interlocking crowns.
3. Gaps are present as a result of natural disturbances (e.g., insects, blowdowns).

1.2 Mixed Conifer with Aspen

Description

The Mixed Conifer with Aspen forest (wet mixed conifer) vegetation community generally occurs at elevations ranging from approximately 6,500 to 10,000 feet. Wet mixed conifer stands typically occur on north and east aspects, lower slopes, and forested valley bottoms and are more common at high elevations. Tree species composition varies depending on seral stage, elevation, and moisture availability. It can be composed of early and mid-seral species such as aspen, Douglas fir, New Mexico locust, southwestern white pine and limber pine, and late seral species such as maple, white fir and blue spruce. Ponderosa pine may be present in minor proportions. The absence of Engelmann spruce and corkbark fir distinguishes wet mixed conifer from the spruce-fir forest. Disturbances typically occur at two temporal and spatial scales: large-scale infrequent disturbances (primarily fire), and small scale frequent disturbances (fire, insect, disease, wind). This forest has an understory of a wide variety of shrubs, grasses, and forbs depending on soil type, aspect, elevation, disturbance, and other factors.

Desired Conditions

Landscape (>1000 ac)

1. Mixed Conifer with Aspen forests display variable stand structures and species composition, but are primarily dense with closed canopies and multiple canopy layers composed predominantly of vigorous trees, but older declining trees are a component.
 - a. The landscape arrangement is an assemblage of variably sized and aged patches of trees and other vegetation associations similar to historic patterns.
 - i. Stands generally have dense structure and dominant and co-dominant vegetation varies in elevation and moisture availability, and by seral stage. Ponderosa pine occurs incidentally or is absent, while Douglas-fir, Southwestern white pine, white fir, and Colorado blue spruce occur as dominant and or co-dominant conifer species. Limber pine may be present in subdominant proportions.
 - ii. An understory consisting of native grass, forbs, and shrubs is present depending on soil type, aspect, elevation, and disturbance history.
 - b. Canopies are generally more closed than in dry mixed conifer.
 - c. Patches of mixed conifer with aspen forest, are mostly in the hundreds of acres with rare patches in the thousands of acres as a result of rare disturbances.
 - d. Old growth generally occurs over large areas as stands. Old growth includes old trees, dead trees (snags), downed wood (coarse woody debris) and structural diversity. The location of old growth shifts across the landscape over time as a result of succession and disturbance (tree growth and mortality).
2. Vegetative conditions (composition, structure, and function) are broadly resilient to disturbances of varying frequency, extent, and severity. The forest landscape is a functioning ecosystem that contains all its components, processes, and conditions that result from endemic levels of disturbances (e.g. insects, diseases, fire, and wind), including old trees, downed logs, and snags.
 - a. Fire severity is mixed or high, with a fire return interval of 35 to 200 or more years (Fire Regimes III, IV, and V). Mixed-severity fire (Fire Regime III) is characteristic at lower elevations of this type. High severity fires (Fire Regime IV & V) rarely occur, and are typically at higher elevations of this type and generally do not exceed 1,000 acre patches of mortality. Fires exhibiting passive to active crown fire behavior are less common but occur under drier conditions. Other smaller disturbances occur more frequently during moister conditions, fires exhibit smoldering low-intensity surface behavior with single tree and isolated group torching.
 - b. Isolated instances of insect and disease infestations (e.g., Spruce Budworm, Douglas-Fir Tussock Moth, Dwarf Mistletoe, Tent Caterpillar) occur at endemic levels and do not affect the ecological function or sustainability of Mixed Conifer with Aspen.
 - c. Organic ground cover and herbaceous vegetation provide protection of soil, moisture infiltration, and contribute to plant and animal diversity and ecosystem function.

Midscale (10 – 1,000 ac)

1. Groups and patches of trees, tens of acres or less are relatively common. A mosaic of groups and patches of trees, primarily even-aged, and variable in size, species composition, and age is present. Aspen is occasionally present in large patches that are hundreds or thousands of acres in size.

2. Basal area ranges from 20 to 180 square feet per acre based upon age and site productivity, and depending upon time since disturbance and seral stages of groups and patches. Basal area can be greater than 180 square feet per acre in late successional stages.
3. Openness and prevalence of some species (e.g. aspen) is dependent on seral stages. Following major disturbances, grass-forb-shrub interspaces may comprise 10 to 100 percent of the mid-scale area (1,000 ac) depending on the type and time since disturbance.
4. Snags, 18 inches or greater at DBH, range from 1 to 5 snags per acre depending on seral stage. Lower ranges of snags are associated with early seral stages and upper ranges are associated with late seral stages. Snags greater than 8 inches DBH average 14 per acre.
5. Averages of coarse woody debris, including downed logs, vary by seral stage and range from 5 to 20 tons per acre for early-seral stages; 20 to 40 tons per acre for mid-seral stages; and 35 tons per acre or greater for late-seral stages.
6. Ground cover consists of shrubs, perennial grasses, and forbs with basal vegetation cover values ranging between 5 and 20 percent depending on the TEU.

Fine (<10 ac)

1. Trees within groups can be of similar or variable species and ages.
2. In mid-aged and older forests, trees are typically variably-spaced with interlocking (grouped and clumped trees) or nearly interlocking crowns.
3. Gaps are present as a result of natural disturbances (e.g., insects, blowdowns).

1.3 Mixed Conifer with Frequent Fire

Description

The Mixed Conifer with Frequent Fire (dry mixed conifer) forest vegetation community is transitional with increasing elevation between ponderosa pine and wet mixed-conifer forests and generally occurs at elevations ranging from approximately 6,000 to 9,500 feet. Dry mixed-conifer forests are dominated by mainly shade intolerant trees such as ponderosa pine, southwestern white pine, limber pine, quaking aspen, and Gambel oak, with a lesser presence of shade tolerant species such as white fir and blue spruce. Mid-tolerant species such as Douglas-fir are common. Aspen may occur as individual trees or small groups. This forest vegetation community typically occurs with an understory of grasses, forbs, and shrubs.

Desired Conditions

Landscape (>1000 ac)

1. Mixed Conifer with Frequent Fire forests display variable stand structures and species composition, but are generally uneven-aged and open with occasional patches of even-aged structure.
 - a. The landscape arrangement is an assemblage of individual, small clumps, and groups of trees interspersed within variably-sized openings of grass-forb-shrubs vegetation associations.

- i. Stands generally have an open structure (less than 30 percent tree cover). Dominant and co-dominant vegetation varies in elevation, moisture availability, and by seral stage. Typically these types were historically dominated by ponderosa pine, with minor occurrence of aspen, Douglas-fir, and Southwestern white pine. More shade-tolerant conifers, such as Douglas fir, white fir, and blue spruce tend to be present in late succession stands depending on site potential.
 - ii. An understory consisting of native grass, forbs, and shrubs is present depending on soil type, aspect, elevation, and disturbance history.
 - b. Canopies are generally more open than in mixed conifer with aspen stands. Denser tree conditions exist in some locations such as north facing slopes and canyon bottoms. Size, shape, number of trees per group, and number of groups per area are variable across the landscape.
 - c. The forest arrangement is in small clumps and groups of trees interspersed within variably-sized openings that range from 10 percent in more productive sites to 50 percent in the less productive sites.
 - d. Snags and large wood (on the ground) are abundant in most development stages.
 - e. Old growth occurs throughout the landscape, generally in small areas as individual old growth components (e.g., snags, coarse woody debris, and structural diversity), or as clumps of old growth. Old growth components include old trees, dead trees (snags), downed wood (coarse woody debris) and structural diversity. The location of old growth shifts across the landscape over time as a result of succession and disturbance (tree growth and mortality).
2. The forest landscape is a functioning ecosystem that contains all its components, processes, and conditions that result from endemic levels of disturbances (e.g. insects, diseases, fire, and wind), including old trees, downed logs, and snags. Vegetative conditions (composition, structure, and function) are broadly resilient to disturbances of varying frequency, extent, and severity.
 - a. Frequent, low severity fires (Fire Regime I) are characteristic in this type, with frequencies of 5 to 21 years. Fires burn primarily on the forest floor and do not spread between tree groups as crown fire. Grasses, forbs, shrubs, needle cast (fine fuels), and small trees maintain the natural fire regime. Disturbances sustain the overall age and structural distribution.
 - b. Isolated instances of insect and disease infestations (e.g., Spruce Budworm, Douglas-Fir Tussock Moth, and Dwarf Mistletoe) occur at endemic levels and do not affect the ecological function or sustainability of Mixed Conifer with Frequent Fire.
 - c. Organic ground cover and herbaceous vegetation provide protection of soil, moisture infiltration, and contribute to plant and animal diversity and to ecosystem function.

Midscale (10 – 1,000 ac)

1. A mosaic of groups and patches of trees, generally comprises an uneven-aged forest with all age classes and structural stages, typically maintained by disturbance. Groups and occasional small patches trees, 50 acres or less, are present. Where they naturally occur, groups of aspen and all structural stages of oak are present.
2. Basal area ranges from 30 to 100 square feet per acre based on age and site productivity, and depending upon disturbance and seral stages of the groups and patches. Basal area can be greater than 100 square feet per acre in late successional stages.

3. Openness typically ranges from 10 percent in more productive sites to 50 percent in the less productive sites. Following major disturbances, grass-forb-shrub interspaces may comprise 10 to 100 percent of the mid-scale areas (1,000 ac) depending on the type and time of disturbance.
4. Snags are typically 18 inches DBH or greater and average 3 per acre. Smaller snags, 8 inches DBH or greater, average 8 snags per acre.
5. Averages of coarse woody debris, including downed logs, vary by seral stage and range from 5 to 30 tons per acre, but typically average 15 tons per acre. Downed logs (less than 12 inch diameter at mid-point, less than 8 feet long) average 3 per acre within forested areas of the landscape.
6. Ground cover consists primarily of perennial grasses and forbs capable of carrying surface fire, with basal vegetation values ranging between about 5 and 20 percent depending on the TEU.

Fine (<10 ac)

1. Groups of trees are typically less than 1 acre in size. In mid-aged and older forests, groups consist of approximately 2 to 50 trees. Trees within groups are of similar or variable ages and one or more species.
2. Trees typically occur in irregularly shaped groups and are variably-spaced with some tight clumps. Crowns of trees within the mid- to old-age groups are interlocking or nearly interlocking.
3. Interspaces surrounding tree groups are variably-shaped and comprised of a grass-forb-shrub mix. Some natural openings contain individual trees or snags.

Objectives

1. Annually treat between 5,000 and 10,000 acres through the use of wildland fire (natural and prescribed), mechanical (e.g. thinning or timber harvest), planting, or other methods, to reduce the potential for active crown fire and to restore this fire adapted ecosystem.

Guidelines

1. Wildland fire (natural & prescribed) should only be suppressed when outside the natural range of variability but is actively suppressed where necessary to protect life, investments, and valuable resources.
2. Management activities should leave an average of 1 to 2 snags greater than 18 inches per acre, when these components exist on the landscape prior to treatment.

1.4 Ponderosa Pine

Description

The Ponderosa Pine forest vegetation community includes two sub-types: Ponderosa pine bunchgrass and ponderosa pine Gambel oak. The ponderosa pine forest vegetation community generally occurs at elevations ranging from approximately 5,000 to 9,000 feet. It is dominated by ponderosa pine and commonly includes other species such as oak, juniper, and piñon. More infrequently species such as aspen, Douglas-fir, white fir, and blue spruce may also be present, and may occur as individual trees. This forest vegetation community typically occurs with an understory of grasses and forbs although it sometimes includes shrubs.

Desired Conditions

Landscape (>1000 ac)

1. Ponderosa Pine Forest displays variable stand structures and species composition, but are generally uneven-aged and open with occasional areas of even-aged structure composed predominantly of vigorous trees but older declining trees are a component and are well distributed throughout the landscape.
 - a. The landscape arrangement is an assemblage of individual, small clumps, and groups of trees interspersed within variably-sized openings of grass-forb-shrubs vegetation associations.
 - i. Stands generally have an open structure (less than 30 percent tree cover). Dominant and co-dominant vegetation varies in elevation, moisture availability, and by seral stage. The dominant species in this system is ponderosa pine. Other trees, such as Douglas-fir, white fir, blue spruce, Gambel oak, piñon pine, one-seed juniper, and Rocky Mountain juniper may be present.
 - ii. An understory consisting of native grass, forbs, and shrubs is present depending on soil type, aspect, elevation, and disturbance history.
 - b. Canopies are generally more open than in mixed conifer frequent fire. Denser tree conditions exist in some locations such as north facing slopes and canyon bottoms.
 - c. Openness typically ranges from 10 percent in more productive sites to 70 percent in the less productive sites. Size, shape, number of trees per group, and number of groups per area are variable across the landscape creating a mosaic of patchiness.
 - d. Snags and large wood (on the ground) are abundant in most development stages.
 - e. Old growth occurs throughout the landscape, generally in small areas as individual old growth components (e.g., snags, coarse woody debris, and structural diversity), or as clumps of old growth. Old growth components include old trees, dead trees (snags), downed wood (coarse woody debris) and structural diversity. The location of old growth shifts across the landscape over time as a result of succession and disturbance (tree growth and mortality).
2. The forest landscape is a functioning ecosystem that contains all its components, processes, and conditions that result from endemic levels of disturbances (e.g. insects, diseases, fire, and wind), including old trees, downed logs, and snags. Vegetative conditions (composition, structure, and function) are broadly resilient to disturbances of varying frequency, extent, and severity.
 - a. Frequent, low severity fires (Fire Regime I) are characteristic in this type, with frequencies of 4 to 30 years. Fires burn primarily on the forest floor and do not spread between tree groups as crown fire. Grasses, forbs, shrubs, and needle cast (fine fuels), and small trees maintain this natural fire regime. Disturbances sustain the overall age and structural distribution.
 - b. Isolated instances of insect and disease infestations (e.g., bark beetle and Dwarf Mistletoe) occur at endemic levels and do not affect the ecological function or sustainability of Ponderosa Pine Forest.
 - c. Organic ground cover and herbaceous vegetation provide protection of soil, moisture infiltration, and contribute to plant and animal diversity and to ecosystem function.

Midscale (10 – 1,000 ac)

1. The mosaic of tree groups generally comprises an uneven-aged forest with all age classes present. Infrequently, patches of even-aged forest structure are present. More biologically productive sites contain more trees per group and more groups per area, resulting in less space between groups.
2. Basal area ranges from 20 to 90 square feet per acre based on age and site productivity and depending upon time since disturbance and seral stages of groups and patches.
3. Openness typically ranges from 52 percent in more productive sites to 90 percent in less productive sites. In areas with high fine-scale aggregation of trees into groups, mid-scale openness ranges between 78 to 90 percent.
4. Snags, 18 inches DBH or greater and average 1 to 2 per acre. In the Gambel oak subtype, large oak snags (less than 10 inches) are a well-distributed component.
5. Averages of coarse woody debris, including downed logs, ranges from 3 to 10 tons per acre. Downed logs (less than 12 inch diameter at mid-point, less than 8 feet long) average 3 logs per acre within the forested area of the landscape.
6. Ground cover consists primarily of perennial grasses and forbs capable of carrying surface fire, with basal vegetation values ranging between about 5 and 20 percent depending on the TEU.

Fine (<10 ac)

1. Groups of trees are typically less than 1 acre in size, but average 0.5 acres. In mid-aged and older forests, groups consist of approximately 2 to 40 trees. Trees within groups are of similar or variable ages and may contain species other than ponderosa pine.
2. Trees typically occur in irregularly shaped groups and are variably-spaced with some tight clumps. Crowns of trees within the mid- to old-age groups are interlocking or nearly interlocking.
3. Interspaces surrounding tree groups are variably-shaped and comprised of a grass-forb-shrub mix. Some natural openings contain individual trees.

Objectives

Reduce the potential for active crown fire and restore frequent fire by improving Ponderosa Pine Forest that are outside or trending away from their natural range of variability by annually treating 5,000 – 10,000 acres on average through the use of wildland fire (natural & prescribed), mechanical (e.g., thinning or timber harvest), planting, or other methods.

Guidelines

1. Wildland fire (natural & prescribed) should only be suppressed when outside the natural range of variability but is actively suppressed where necessary to protect life, investments, and valuable resources.
2. Management activities should leave an average of 1 to 2 snags greater than 18 inches per acre, when these components exist on the landscape prior to treatment.

1.5 Piñon-Juniper Grass and Juniper Grass

Description

Piñon-Juniper Grass occurs in what were historically more open woodlands with grassy understories. Tree species include two-needle piñon, one-seed juniper, Utah juniper, and occasional alligator juniper. Native understories were made up of perennial grasses, with both annual and perennial forbs, and shrubs that were absent or scattered. Native understories are made up of predominantly cool season perennial grasses including muttongrass, squirreltail, and western wheatgrass with both annual and perennial forbs, while shrubs are absent or scarce (less than 1 percent cover). The PJ Grass type is typically found on sites with well-developed, loamy soil characteristics, including gentle upland and transitional valley locations, where soil conditions favor grasses (or other grass-like plants) but can support at least some tree cover. Some savannas apparently have sparse tree cover because of climatic limitations on woody plant growth

Juniper Grass is typically on warmer and drier settings beyond the environmental limits of piñon pine, and just below and often intergrading with the piñon-juniper zone. A dense herbaceous matrix of native grasses and forbs characterize this type. Typical disturbances (fire, insects, and disease) are of low severity and high frequency. These disturbance patterns create and maintain the uneven-aged, open-canopy nature of this type. Typically, native understory grasses are perennial species, while forbs consist of both annuals and perennials. Shrubs are characteristically absent or scattered. This type is typically found on sites with well-developed, loamy soil characteristics, generally at the drier edge of the woodland climatic zone. Generally these types are most extensive in areas dominated by warm (summer) season or bi-modal precipitation regimes. Overall these sites are less productive for tree growth than the Piñon-Juniper Woodland type.

Desired Conditions

Landscape (>1000 ac)

1. Piñon-juniper grass and juniper grass are generally uneven-aged and open in appearance. Trees occur as individuals, but occasionally in smaller groups, and range from young to old.
 - a. Scattered shrubs and a dense herbaceous understory including native grasses, forbs and annuals are present to support frequent surface fires.
 - b. Patch sizes range from individual trees and clumps that are less than one-tenth acre, to tree groups of approximately one acre.
 - c. Snags 8 inches diameter at root collar (DRC) or larger, average 5 snags per acre. Snags 18 inches DRC or larger, average 1 snag per acre.
 - d. Coarse woody debris increases in later successional stages and averages 1-3 tons per acre.
 - e. Old growth occurs throughout the landscape, generally in small areas as individual old growth components, or as clumps of old growth. Old growth components include old trees, dead trees (snags), downed wood (coarse woody debris), and structural diversity. The location of old growth shifts across the landscape over time as a result of succession and disturbance (tree growth and mortality).
2. The composition, structure, and function of vegetative conditions are resilient to the frequency, extent, and severity of disturbances (e.g., insects, diseases, fire) as well as climate variability.
 - a. Fires are typically frequent and of low-severity (Fire Regime I).
 - b. Isolated insect and disease infestations (e.g., Ips Beetle) occur at endemic levels and do not affect the ecological function or sustainability of Piñon-Juniper.

- c. Ground cover consists primarily of perennial grasses and forbs capable of carrying surface fire, and averages between 10 and 30 percent, depending on the TEU. Shrubs average less than 30 percent canopy cover.

1.6 Piñon-Juniper Sagebrush

Description

The Piñon-Juniper Sagebrush ERU is concentrated in geographic areas dominated by cold (winter) season precipitation regimes and the frigid soils. These systems have a distinct appearance of open woodland canopies interspersed by Colorado Plateau and Great Basin shrub species. Trees occur as individuals or in smaller clumps, and range from young to old. Tree clumps are often even-aged. The understory is dominated by moderate to high density shrubs, and the development of the herb layer is limited and concentrated in canopy openings. The tree and shrub species composition varies throughout the Forest; piñon is occasionally absent, but one or more juniper species are always present. Generally the sparse native understory grass development includes perennial species, while forbs consist of both annuals and perennials. Shrubs are characteristically well distributed, and usually achieve high canopy closure during mature successional phases or where livestock grazing has favored their development over herb species.

Desired Conditions

Landscape (>1000 ac)

1. Typically groups are even-aged in structure. Trees occur as individuals or in smaller groups ranging from young to old. Piñon trees are occasionally absent but one or more juniper species is always present.
 - a. The understory is dominated by moderate to high densities of shrubs, depending on successional stage. The shrub component consists of one or a mix of shrub species (e.g., sagebrush, evergreen shrub, oak, or other), which are well-distributed. Shrubs typically are in a closed canopy state during later successional stages.
 - b. Native perennial grasses and annual and perennial forbs are present as understory components.
 - c. Patch sizes range from one to tens of acres.
 - d. Snags 8 inches DRC or larger average 6 snags per acre. Snags 18 inches DRC or larger average 1 snag per acre.
 - e. Coarse woody debris averages about 4 tons per acre.
2. The composition, structure, and function of vegetative conditions are resilient to the frequency, extent, and severity of disturbances (e.g. insects, diseases, fire) as well as climate variability.
 - a. Fires are typically infrequent mixed-severity, with rare stand replacement fires (Fire Regime III (V)).
 - b. Isolated insect and disease infestations (e.g., Ips Beetle) occur at endemic levels and do not affect the ecological function or sustainability of Piñon-Juniper.
 - c. Ground cover consists primarily of shrubs, perennial grasses, and forbs capable of carrying surface fire only infrequently, with basal vegetation values averaging between about 10 and 35 percent, depending on the TEU.

1.7 Piñon-Juniper Woodlands

Description

Piñon-Juniper Woodlands are mostly found on lower slopes of mountains and in upland rolling hills at approximately 4,500 to 7,500 feet in elevation. They have broad grouping of different plant associations with trees occurring as individuals or in smaller groups and range from young to old, but more typically as large, even-aged structured patches. Piñon-Juniper Woodlands characteristically has a moderate to dense tree canopy and a sparse understory of perennial grasses, annual and perennial forbs, and shrubs. Woodland development occurs in distinctive phases, ranging from open grass-forb, to mid-aged open canopy, to mature closed canopy. Some types on broken or rocky terrain exhibit little to no natural fire, and insects and disease may be the only disturbance agents. Most common piñon pine is the two-needle piñon occurring in limited areas. One-seed juniper is most common, however, there are areas with Utah juniper and Rocky Mountain juniper. In addition, annual and perennial grasses and graminoids, forbs, half-shrubs and shrubs can be found beneath the woodland overstory.

Desired Conditions

Landscape (>1000 ac)

1. Persistent Piñon-juniper woodland consist of even-aged patches of piñons and junipers that at the landscape level form multi-aged woodlands. Very old trees (more than 300 years old) are present.
 - a. Tree density and canopy cover are high, shrubs are sparse to moderate, and herbaceous cover is low and discontinuous.
 - b. Patch sizes range from tens to hundreds of acres.
 - c. Snags 8 inches DRC or larger, average 5 snags per acre. Snags 18 inches DRC or larger average 1 snag per acre.
 - d. Coarse woody debris increases in later successional stages and averages 2-5 tons per acre.
 - e. Old growth features are often concentrated in mid- and fine-scale units as patches of old growth. The location of old growth shifts across the landscape over time as a result of succession and disturbance (tree growth and mortality).
2. The composition, structure, and function of vegetative conditions are resilient to the frequency, extent, and severity of disturbances (e.g. insects, diseases, fire), as well as climate variability.
 - a. Fire as a disturbance is less frequent and variable due to differences in ground cover. The fires that do occur are mixed to high severity (Fire Regime III, IV, & V).
 - b. Isolated insect and disease infestations (e.g., Ips Beetle) occur at endemic levels and do not affect the ecological function or sustainability of Piñon-Juniper.
 - c. Ground cover consists of shrubs, perennial grasses, and forbs and ranges between 5 and 15 percent, depending on the TEU.

1.8 Sagebrush Shrubland

Description

The Sagebrush Shrubland is dominated by big sagebrush and primarily occurs adjacent to Great Basin grassland and piñon juniper woodland ERUs. While Wyoming big sagebrush is the dominant species, other shrubs and grasses and forbs are present. Historically, tree canopy cover exceeded ten percent, with the exception of early, post-fire plant communities. Sagebrush shrubland sites are usually found on deep well-drained valley bottom soils between 4,800 and 5,800 feet with precipitation ranging between ten to eighteen inches per year.

Desired Conditions

Landscape (>1,000 ac)

1. The composition, structure, and function of biotic and abiotic components of the Sagebrush Shrubland vegetation community are within the natural range of variability.
 - a. Shrub cover ranges from 20 to 85 percent depending on elevation, soil type, aspect, and site productivity.
 - i. Wyoming big sagebrush is the dominant species, other shrubs such as broom snakeweed and shadscale are common, as are grassland species such as blue grama, junegrass, and western wheatgrass.
 - b. Groups of trees and single tree cover is less than 10 percent.
 - c. A vigorous, though not necessarily dense, understory community of native grasses and forbs is present with cover at 10 to 20 percent and bare soil as high as 40 percent, depending site specific conditions.
 - d. Biological soil crusts are present and improve nutrient cycling and stabilize soils.
2. The Sagebrush Shrubland vegetation type is characterized by fairly frequent (12 to 70 years), mixed-severity fire (Fire Regime IV).

1.9 Montane Subalpine Grasslands

Description

The Montane Subalpine Grasslands occur at elevations ranging from 8,000 to 11,000 feet as small to large openings within Spruce-Fir, Mixed Conifer, and Ponderosa Pine Forests and often harbor several plant associations with varying dominant grasses and herbaceous species. Montane subalpine grasslands are a mix of grass communities including bunchgrasses, perennial and annual forbs, sod-grasses, and sedges. These meadows typically have higher herbaceous species richness than adjacent forest and are typically dominated by Arizona fescue, mountain muhly, screwleaf muhly, wheatgrasses, oatgrasses, blue gramma, and Thurber's fescue, depending on soil texture, soil moisture, elevation, site exposure (e.g., ridges), and disturbance. Trees and shrubs may occur along the periphery of the meadows. These meadows are seasonally wet, which is closely tied to snowmelt but do not typically experience flooding events.

Desired Conditions

Landscape (>1,000 ac)

1. The composition, structure, and function of biotic and abiotic components of the Montane Subalpine Grasslands vegetation community are within the natural range of variability.
 - a. Montane Subalpine Grasslands are open and grassy (cover 50-90 percent) with tree and shrub canopy cover less than 10 percent.
 - b. Vegetation is dominated by a diversity of desirable native warm and cool season grasses and forbs and are maintained at levels that contribute to suitable hydrologic function, soil stability, and nutrient cycling, while providing food and cover for wildlife and livestock.
 - c. Soil function is sustained. Soils are permeable and capable of infiltrating water to reduce overland flows during precipitation events limiting erosion and deposition.
2. The Montane Subalpine Grassland vegetation type is characterized by frequent (2 to 22 years) high-severity fire (Fire Regime I) where grass is consumed but impacts to soil are low. Fire return intervals are influenced by the fire regimes in adjoining vegetation types.

Midscale (10 - 1,000 ac)

1. The composition, structure, and distribution of native vegetation reflect a mix of early, middle, and late seral stages. Early seral stages typically contain more forbs while older stages are dominated by bunchgrasses. Native plant species are present in all age classes and are healthy, reproducing, and persisting.
2. Depending on soil type, bare soil is no more than 55 percent of an area and is most often less than 10 percent. Vegetative groundcover ranges between 30 to 75 percent.
3. Soil conditions support vegetation communities that provide hiding, nesting, and thermal cover in contiguous blocks for wildlife.

Fine (<10 ac)

1. Vegetative biological diversity is high in Montane Subalpine Grasslands. Disturbance and site potential result in a mosaic of vegetation densities (densely vegetated to bare areas) across the landscape.
2. Cool season grasses and forbs provide nutritional forage while shrubs and standing grass growth from the previous year provide hiding cover to protect wildlife from predation.
3. Grasslands are connected with minimal (less than 5 percent) shrub and tree cover.

1.10 Colorado Plateau and Great Basin Grasslands

Description

The Colorado Plateau and Great Basin Grasslands are found along elevational and temperature gradients above Semi-Desert Grasslands and below Montane-Subalpine Grasslands. It occupies cooler and wetter sites than Semi-Desert Grasslands. This ERU is typically associated with Pinyon-Juniper Grass along the grassland-woodland ecotone in cool climates. Vegetation coverage consists of mostly grasses and interspersed shrubs. Grass species may include but are not limited to Indian ricegrass, threeawn, blue grama, fescue, needle and thread grass, spike fescue, muhly, James' galleta, and Sandberg bluegrass.

Shrub species may include but are not limited to various species of sagebrush, saltbush, Ephedra, snakeweed, winterfat, one-seeded juniper, Utah juniper and wax currant.

Desired Conditions

Landscape (>1,000 ac)

1. The composition, structure, and function of biotic and abiotic components of the Colorado Plateau and Great Basin Grassland vegetation community are within the natural range of variability.
 - a. Colorado Plateau and Great Basin Grasslands are open and grassy (cover greater than 25 percent) with tree and shrub canopy cover less than 10 percent.
 - b. Vegetation is dominated by a diversity of warm and cool season grasses maintained at levels that contribute to suitable hydrologic function, soil stability, and nutrient cycling, while providing food and cover for wildlife and livestock.
 - c. Soil function is sustained. Soils are permeable and capable of infiltrating water to reduce overland flows during precipitation events limiting erosion and deposition.
2. The Colorado Plateau and Great Basin Grassland vegetation type is characterized by frequent (10 to 30 years) high-severity fire (Fire Regime I) where grass is consumed but impacts to soil are low.

Midscale (10 - 1,000 ac)

1. The composition, structure, and distribution of native vegetation reflect a mix of early, middle, and late seral stages. Mid-seral stages are dominated by grasses with cover greater than 25 percent grass and less than 10 percent shrub, while late seral stages have 10 to 30 percent shrub cover. Native plant species are present in all age classes and are healthy, reproducing, and persisting.
2. Depending on soil type, bare soil is no more than 50 percent of an area and averages 35 percent. Groundcover vegetation ranges between 10 and 40 percent.

Fine (<10 ac)

1. Disturbance and site potential result in a mosaic of vegetation densities (densely vegetated areas to bare areas) across the landscape.
2. Cool season grasses and forbs provide nutritional forage while shrubs and standing grass growth from the previous year provide hiding cover to protect wildlife from predation.
3. Grasslands are connected with minimal (less than 5 percent) shrub and tree cover.

1.11 Riparian Areas and Wetland Ecosystems

Description

Riparian areas are the areas between the terrestrial and aquatic ecosystems. Riparian areas only occupy about 2.75% of the Santa Fe National Forest but are very important ecosystems. Wetlands are lands saturated with water, either permanently or seasonally. Both riparian areas and wetland ecosystems systems are areas that support higher soil moistures, cooler temperatures, and greater productivity. The dependence of both humans and wildlife on water make these areas an integral part of the ecosystem as well as areas of high-use.

Desired Conditions

1. Riparian areas and wetland ecosystems have a diverse composition of desirable native plants that contain a patchwork of communities creating a structurally robust vegetative network that protects the soils from unnatural erosion.
 - a. Woody vegetation within riparian areas and wetland ecosystems display a variety of size classes; they provide terrestrial and aquatic habitats, stream shading (temperature regulation), woody channel debris, aesthetic values, and other ecosystem functions.
 - b. Woody debris is present in a variety of sizes in forest and shrubland riparian areas and wetland ecosystems.
 - c. Invasive plant species are rare or absent (per Desired Condition 1 in Wildlife: Non-native and Invasive Species).
2. Riparian areas and wetland ecosystems have highly productive soils that maintain vegetative cover sufficient to catch sediment, dissipate energy, prevent erosion, stabilize stream banks, provide aquatic and terrestrial wildlife habitat, and promote floodplain development.
 - a. Long-term impacts to soils (e.g., soil erosion, soil compaction, soil displacement, puddling, and severely burned soils) are rare or non-existent on all riparian area and wetland ecosystems.
3. Riparian areas and wetland ecosystems have flow regimes that contribute to stream-channel and floodplain development, maintenance, and function, and facilitate the regeneration of native plants that depend on flooding for regeneration.
 - a. Riparian areas and wetland ecosystems are resistant and resilient to disturbances (e.g. floods, fire, drought, and changes in climate).

Objectives

1. Restore the composition and structure of three impaired riparian or wetlands areas within ten years.
2. Improve at least one water resource feature (e.g. riparian areas, springs, and streams) every five years.
3. Treat and control invasive species on at least two stream reaches every year, with an objective of ten miles treated every ten years. Maintain follow-up treatments to prevent the regrowth, establishment, or spread of treated or other invasive species. Invasive species may include:
 - a. Tamarisk (*Tamarix sp.*)
 - b. Russian olive (*Elaeagnus angustifolia*)

- c. Siberian elm (*Ulmus pumila*)
- d. Tree-of-Heaven (*Ailanthus altissima*)
- e. Other undesirable (e.g. juniper, non-native, invasive) species that could disrupt ecological function, cause economic or environmental harm, or harm to human, animal, or plant health

Standards

1. Project activities with potential effects to water resource features must use best management practices (Soil and Water Conservation Practices Handbook, Region 3) specific to each activity.
2. Stream channels will not be straightened or altered by management actions unless necessary for resource protection.
3. New groundwater wells will be located so that springs, wetlands (including riparian areas), surface flows, and groundwater-dependent ecosystems are not impacted.
4. Ground disturbing activities within riparian areas and wetland ecosystems must take measures to not introduce new or spread existing invasive species and pathogens (per Standard 1 in Wildlife: Non-native and Invasive Species).
5. New infrastructure must not be developed within 100 feet of either bank or shoreline unless its construction is necessary for resource enhancement or protection.

Guidelines

1. Riparian management zones should be defined by either a minimum of 100 feet from the edge of all perennial streams and lakes or a site-appropriate delineation of the riparian area. The exact width of riparian management zones may vary based on ecological, geological, landscape features, or water body type, and includes those areas which provide riparian and aquatic ecosystem functions and connectivity.
2. Recreation activities, permitted uses, and management activities should occur at levels or scales that protect water quality or do not result in detrimental change.
3. Activities within riparian areas should avoid or otherwise mitigate adverse impacts to the abundance and distribution of desirable native species to maintain or improve the ecological integrity of riparian area and wetland ecosystems.
4. Certified, weed-free native seed mixes of local species varieties should be used to revegetate riparian areas and wetland ecosystems when commercially available. Sterile, non-native, non-invasive plant material may be used in limited situations where considered necessary to protect resources and stabilize soils in a timely fashion. Non-native, invasive plant species that may persist longer than two years should not be used.
5. Woody riparian vegetation along stream channels should maintain bank stability, moderate daily water temperature fluctuations, and provide cover for wildlife.
6. Downed woody material in stream channels should be retained except where safety is a concern.
7. The use of motorized equipment should be avoided in riparian areas and wetland ecosystems except when there is a designated stream crossing or when short-term uses are required to improve resource conditions and maintain infrastructure.

8. Management activities should maintain or improve the age class distribution and diversity of riparian plants and habitat for wildlife in wetland and riparian areas.
9. Herbivory of riparian plants should not impact the long-term health of riparian systems.
10. In wetland or riparian areas, livestock grazing should be avoided in the same area during the same vegetative growth and reproduction periods (e.g. leafing, flowering, seeding) in consecutive years. Exceptions to this may include, but are not limited to, connecting trails that may be adjacent to wetland and riparian areas due to topography constraints.

Management Approaches

1. Pursue partnerships for collaborative management of riparian and wetland areas.
2. Collaborate with partners to communicate the ecological significance of riparian and wetland systems to the broader public and to garner support for restoration activities.
3. Consider regional riparian and aquatic ecosystem strategies when formulating riparian management actions.
4. If natural regeneration is not sufficient to provide shading, bank cover, and streambank stability, supplement with plantings to reestablish native riparian vegetation.
5. Access points to natural waters should be designated to protect riparian areas by preventing erosion, trampling, and the introduction of undesirable species.
6. Restoration activities should recognize the dependence of riparian ecosystems on upland ecological health and address underlying causes of degradation.

1.12 Wildland Urban Interface (WUI)

Description

The Wildland Urban Interface (WUI) is the area or zone where structures and other human development meet and intermingle with undeveloped wildland or vegetation fuels. Generally, the WUI is a buffer of at least ½ mile around communities, private lands, or other infrastructure, though it may vary based on topography, fuels, and values at risk.

Desired Conditions

1. In order to reduce fire intensity and assist in the control of fire in the wildland urban interface (WUI), the desired conditions for each Ecological Response Unit (ERU) may be different than in non-WUI areas.
 - a. Densities of snags, coarse woody debris, and live trees are 20 to 60 percent lower in WUI areas than in non-WUI areas;
 - b. Crown base heights may be 40 to 80 percent higher in WUI areas than in non-WUI areas to reduce the potential for fire spreading into tree canopies; and trees may be more widely spaced and disturbances (e.g., prescribed fire, vegetation treatments) may occur more frequently.

2 Fire and Fuels

Description

Wildland fire is any non-structure fire that occurs in the wildlands, including planned human (prescribed fire), naturally-caused fires (i.e., lightning ignitions) or unwanted human caused fires. Most of the vegetation on the Santa Fe NF is adapted to recurrent wildland fires. Frequent, low-intensity and low-severity fires play a vital role in maintaining the health of these fire adapted ecosystems. Fire, both planned and unplanned, is a tool for restoring these fire-adapted ecosystems, if properly managed to reduce the accumulation of fuels (live and dead vegetation matter). When appropriate weather and fuel conditions exist, the use of wildland fire is a cost-effective tool for restoring ecosystem function and reducing the likelihood of wildland fire uncharacteristic to its natural regime.

Desired Conditions

1. Fire plays its natural ecological role as a disturbance necessary to maintain desired conditions, but is actively suppressed where necessary to protect life, investments, and valuable resources. Prescribed fire is an accepted substitute for natural fire and effects are appropriate to the vegetation type.
2. Wildland fire is recognized both internally and by the public, as a keystone process essential to the function and sustainability of ecosystems.
3. Restoration and fuel treatments provide for the sustainability of resources amid uncertain future environmental conditions and stressors resulting in resources that are adaptable to changing conditions.
4. Natural caused fires predominate; human caused fires (e.g., abandoned campfire, fires caused by motor vehicles or downed powerlines) are rare.
5. Vegetative conditions around private inholdings are resilient to high severity wildfires.

Standards

1. The response to wildfire must be based on safety, weather, economics and site-specific conditions (e.g., fuel conditions, topography, and values) in order to accomplish integrated resource objectives. The response may change as the wildfire progresses over space and time.
2. When suppression is the objective, the agency administrator must consider firefighter exposure, risk, values, cost and likelihood of success rather than trying to limit wildfires to the smallest possible size.
3. Active suppression of fire must occur where necessary to protect life, investments, and valuable resources (e.g., cultural resources, wildland urban interface, utility corridors and communication sites, recreation facilities, and administrative sites).
4. Minimum Impact Suppression Techniques (MIST) must be used when impacts to sensitive resources could result during fire suppression activities. Avoid ground disturbing activities on sites where rare or sensitive plants exist.
5. Aerial application of retardant in live water, wetlands, and riparian areas must be avoided unless necessitated by human safety or property loss considerations.

Guidelines

1. Firefighter and public safety concerns should be addressed as the highest priority in all wildland fire management and fuel treatment projects and activities.
2. Naturally ignited fires (including those occurring in designated areas) should be managed to meet multiple resource objectives when fire weather conditions facilitate progress toward desired conditions (per Desired Conditions of various resources throughout the plan).
3. Wildfire management activities should protect cultural resources, with priority given to sites listed in or eligible for listing in the National Register of Historic Places and to known sites where eligibility has not been determined (i.e., sites not evaluated).
4. Post-fire restoration and recovery, should be provided, where critical resource concerns merit rehabilitation for controlling the spread of invasive species, protecting areas of cultural concern, protecting critical or endangered species habitat, or protecting other highly valued resources.
5. Where they exist, natural and manmade barriers (e.g., roads, canyon walls, rockslides, rivers) should be used to confine or contain fire.

Management Approaches

1. In areas of high vulnerability to climate change, consider a diversity of management approaches to facilitate natural adaptation to changing conditions. Because many early- to mid-seral species or species characteristic of lower life zones are adapted for warmer and drier conditions, manage in favor of these species over late-seral species and species of higher life zones. Consider managing tree basal area at the low end of the range of desired conditions to mitigate water stress.
2. Watershed conditions reflect historic fire regimes (i.e., severity and frequency), especially those identified by NMED that provide public drinking water.
3. Strategize the location of treatments where they provide the most ecological benefit and acres are easier to implement..
4. In wildland and managed fire areas, consider seeding with native vegetation or annual agricultural seed mix and other site rehabilitation practices are implemented, as necessary. It is suggested that fire suppression support activities and facilities (including constructed fire lines, fuel breaks and safety areas, fire camps, staging areas, heli-bases, and heli-spots), follow the same site rehabilitation practices.

3 Water Resources

Description

Water from the Forest supports many uses throughout New Mexico, and further downstream. Groundwater, streams, lakes, ponds, playas, springs, wetlands, and riparian corridors comprise the majority of the water resources on the Santa Fe NF. Stream ecosystems have flowing water and include rivers, creeks, streams, and their associated riparian vegetation zones and flood plains. The Forest has approximately 1,180 miles of perennial streams and 5,070 miles of intermittent and ephemeral streams. Waterbodies include lakes, ponds, and reservoirs. They store water and support recreation and fisheries. Water bodies (lakes, ponds, playa, etc.) cover nearly 1,000 acres on the Forest. Over 200 springs and seeps, 7,000 plus acres of wetlands and approximately 51,000 acres of riparian corridors exist on the Santa Fe NF. Seeps and springs occur where groundwater emerges on sloping terrain, toe-slope breaks, and geologic formation transition zones. Seeps are a particular type of spring with low flow that filters to the surface through permeable soils and substrates.

Desired Conditions

1. Water quality across the forest meets or exceeds the State's water quality standards and provides for designated uses.
2. Stream channel types are connected to their floodplains and riparian areas, maintain the ability to transport overbank flows, and are capable of transporting high flow events.
3. All free-flowing streams remain free of developments that restrict or alter natural flow.
4. Ecological and recreational values for streams with existing water developments are protected.
5. Natural processes of groundwater recharge and discharge support the long-term sustainability of aquifers and accommodate human-use throughout climate fluctuations.
6. Watersheds are functioning properly:
 - a. Provide for high biotic integrity (habitats that support adaptive plant and animal communities);
 - b. Are resilient to natural and human-caused disturbances such as fire and climate fluctuations;
 - c. Exhibit a high degree of connectivity;
 - d. Provide for important ecosystem services; and
 - e. Maintain long-term soil productivity.

Objectives

1. Complete projects (e.g., road decommissioning, restore stream channel function) that improve conditions in at least two "impaired" or "functioning at-risk" watersheds (Watershed Classification Framework) every ten years.

Standards

1. Best Management Practices (FSH 2509.22 - Soil and Water Conservation Practices Handbook, FS-990A) must be used to minimize management impacts to watershed function including water quality and quantity.

2. Management actions in Outstanding National Resource Water areas must not increase non-point source pollution and ensure water quality is not degraded.
3. New trans-basin water diversions are not allowed.

Guidelines

1. Management activities should not negatively impact groundwater quality or quantity to the extent that groundwater-dependent water bodies are adversely affected.
2. Management activities should not negatively impact surface water quality or quantity.
3. Activities that cause a long-term trend away from desired conditions should not be allowed within aquatic management zones. Aquatic management zones have a minimum horizontal width from the top of each bank of 100 feet.
4. Ditches authorized on NFS lands should maintain a sufficient freeboard above the water line of the ditch to avoid overtopping and minimize damage to the ditch. Headgates and conveyance structures should be maintained in good functioning condition and should be clear of sediment and other debris in order to ensure proper operation. The headgate should be closed during periods of non-use.
5. Water conveyance structures (e.g. ditches, pipelines) authorized on NFS lands should be maintained to minimize water loss and control soil erosion and gulying resulting from operations and maintenance of the structure.
6. To protect water quality and aquatic species, heavy equipment and vehicles driven into a water body should be completely clean of petroleum-based fluid residue or use eco-friendly, biodegradable, and nontoxic hydraulic fluids. Lubricants and fuels should be sealed such that inundation by water should not result in leaks.
7. Consistent with existing water rights, water diversions, or obstructions should allow sufficient water to pass downstream to preserve flow levels necessary to maintain aquatic life and other ecological and socioeconomic purposes.

Management Approaches

1. Work with local, State, and Tribal governments, Land Grants, non-government organizations, and other stakeholders to identify improvement projects, priorities for protection and management of watersheds.
2. Actively participate in the development of all of the Total Maximum Daily Load (TMDL) determinations and watershed based plans with the New Mexico Environment Department.
3. Work with acequia associations and permittees to maintain diversion structures in properly functioning condition.
4. Work to remedy impacts (e.g., downcut channels, enlarged channels, loss of riparian habitat) that are caused by water diversions. This may include collaboration with ditch and acequia owners.

4 Wildlife, Fish, and Plants

4.1 Aquatic Species and Habitats

Description

Aquatic species include all classifications of plants animals that live in water features on the forest (e.g., streams, springs, pools) for all or most of their lives. Aquatic species on the forest mostly consist of fish, amphibians, and many species of plants and insects. These animals are native to the forest and are not considered invasive nor is their persistence on the forest of concern.

Desired Conditions

1. Aquatic habitats are distributed across the forest in sufficient quantity (redundancy and size) and with appropriate habitat components to support self-sustaining populations of native fish and other aquatic species. Non-native sportfish are supported in stream reaches where there is strong recreational interest and do not jeopardize native species populations.
 - a. Streams display appropriate form (pattern, profile and dimension) that support aquatic and riparian-dependent species.
2. Aquatic habitats support a complete assemblage of desirable (native and sport) aquatic species and are resilient to natural and human disturbances including projected warmer and drier climatic conditions.
 - a. Undesired non-native and invasive aquatic species as well as introduced pathogens are rare or absent (per Desired Condition 1 in Wildlife: Non-native and Invasive Species).
3. Aquatic species habitat conditions provide redundancy necessary to maintain species biodiversity and functioning metapopulations (an interconnected group of subpopulations separated by space but consisting of the same species).
 - a. Aquatic habitats are connected and free from alterations (e.g., temperature regime changes, lack of adequate streamflow, barriers to aquatic organism passage) to allow for species migration, connectivity of fragmented populations and genetic exchange. Barriers to movement are located where necessary to protect native fish from non-native species.

Objectives

1. Complete at least 5 aquatic habitat restoration projects (e.g. increase pool quantity, provide stream cover, etc.) every 10 years to benefit aquatic species.

Standards

1. Within aquatic or riparian systems, allow only those actions that maintain or improve long-term stream health and riparian ecosystem condition.
2. Refueling of equipment must not take place within or adjacent to the stream channel.

Guidelines

1. Except where barriers are beneficial and necessary to achieve conservation goals for aquatic species, fragmentation of aquatic habitats and isolation of aquatic species should be avoided and passage for aquatic organisms should be maintained.
2. Projects and management activities within aquatic and riparian systems should be designed or managed to maintain high-quality habitat that consists of:
 - a. Pool-to-riffle ratio of at least 30 percent of the stream reach
 - b. Pool quality with average residual pool depth greater than or equal to 12 inches
 - c. Less than 20 percent fines (sand, silt, clay) in riffle habitat
 - d. Appropriate width-to-depth ratios for the stream channel type (Rosgen or equivalent)
 - e. Stream bank condition is less than 10 percent unstable banks (lineal stream bank distance)
 - f. At least 60 percent of woody riparian cover consists of at least three native plant species or where soil characteristics do not support woody vegetation, native obligate wetland species dominate herbaceous bank cover.
 - g. In forested streams, large woody debris consists of greater than 30 pieces per mile and greater than 12 inches in diameter and greater than 35 feet in length.
 - h. Large diameter trees and snags near stream channels and riparian areas exist in a quantity that provide for recruitment of large woody material to stream channels.
3. Man-made structures (e.g. instream structures, fencing) should be maintained to support the purposes for which they were built and removed when no longer needed.
1. Management of coldwater streams should include adequate vegetation cover and width-to-depth ratio to move toward State of New Mexico standards for stream water temperatures.

Management Approaches

1. Pursue partnerships for collaborative management of aquatic resources.

4.2 Terrestrial Species and Habitats

Description

Terrestrial species include all classifications of plants and animals that live predominantly on land. Terrestrial species on the forest mostly consist of mammals, birds, reptiles, and many species of plants and insects. These animals are native to the forest and are not considered invasive nor is their persistence on the forest of concern.

Desired Conditions

1. Native ecosystems are composed of appropriate assemblages of sustainable populations of plant and animal species that are supported by healthy ecosystems.

- a. A diversity of habitat components, including biotic and abiotic features, are available at the appropriate spatial, temporal, compositional, and structural levels to provide adequate opportunity for breeding, feeding, nesting, and other critical life history needs of wildlife.
 - b. Undesired non-native and invasive terrestrial species as well as introduced pathogens are rare or absent (per Desired Condition 1 in Wildlife: Non-native and Invasive Species).
 - c. Terrestrial habitats allow for the maintenance and promotion of interspecific relationships (e.g. predator-prey relationships).
2. Habitats are connected and in the appropriate configuration to allow wildlife populations to adjust their movements in response to major disturbances (e.g. climate change, uncharacteristic fire) and promote genetic flow between wildlife populations.
 3. Human-wildlife conflicts are minimal and human disturbance of species is minimized to prevent impact to vital functions of wildlife (e.g., breeding, feeding, and rearing young).

Objectives

1. Maintain, improve, or install at least one water feature per year to improve water availability for wildlife where natural water sources are limited. This may be done in conjunction with water features for range.
2. Restore or enhance at least 50,000 acres of terrestrial wildlife habitat during each 10 year period of the life of the plan.

Standards

1. Constructed water features (e.g. water tanks, cattle guards) must provide safe access and escape for wildlife, such as ramps or other climbing features.

Guidelines

1. Manmade structures (e.g., fences, steel posts, vent pipes) should be constructed and maintained to minimize wildlife mortality (e.g. capped fence posts) and removed when no longer needed.
2. Infrastructure (e.g. fences, roads) should be designed, modified, or removed to minimize impacts on wildlife movement and improve habitat connectivity.
3. Activities negatively impacting wildlife reproduction should be minimized.
4. Geologic and physical features (e.g., talus slopes, cliffs, canyon slopes, caves) should be protected from damage or loss in order to retain their importance for wildlife habitat and ecological functions.

Management Approaches

1. Work collaboratively with the New Mexico Department of Game and Fish and other organizations, individuals, and groups to plan and implement projects for the management of wildlife and their habitats.

2. Collaborate with other adjacent land ownership to encourage an all-lands approach at a scale that improves landscape connectivity across mixed ownerships where natural systems span multiple administrative boundaries.
3. Consider seasonal road restrictions and area closures to provide refuge in small and large blocks of land for a wide range of species.
4. During project planning, consider mitigations to wildlife habitat resulting from the effects of long-term and short-term climate fluctuations (e.g., global climate change, drought, El Niño Southern Oscillation (ENSO)), and subsequent effects of management activities.

4.3 Rare and Endemic Species and Habitats

Description

Rare species are those that are very uncommon, scarce, or infrequently encountered even though they may not be endangered or threatened. Endemic species are only found in a given region or location and nowhere else in the world. Geologic differences between the two mountain ranges on the forest are the basis for some of the endemic species that are found only on the Santa Fe NF or in only one mountain range.

Desired Conditions

1. Locations and status (e.g., population, threats, habitat requirements) of rare and endemic species are known.
2. Habitats and refugia for rare and endemic species are intact, functioning, and sufficient for species persistence.

Guidelines

1. For new documented occurrences of rare and endemic species, best available science and consultation with species experts should be used to determine if measures are needed to protect and provide for their sustainability.

Management Approaches

1. Collaborate with universities, state and federal agencies (e.g., Forest Service Research and Development, US Geological Survey, Natural Resources Conservation Service, New Mexico State Forestry, New Mexico Department of Game and Fish), and other organizations (e.g., The Nature Conservancy, Natural Heritage New Mexico, Native Plant Society of New Mexico), to obtain data and encourage research on rare and endemic species.
2. Strive to work with partners to promote public education and valuing of rare and narrow endemic species on the forests.
3. Geographic Information Systems (GIS) is the preferred database of record for rare and endemic species observations and population locations.

4.4 Non-native and Invasive Species

Description

Non-native species are species that were introduced to the area but did not naturally occur there. Invasive species have the ability to spread and can disrupt ecological function, cause economic harm, or impact human health. Not all non-native species are undesirable but all invasive species are undesirable. Non-native and invasive species can have negative impacts on native wildlife as well as other ecological and socioeconomic resources.

Desired Conditions

1. Invasive species (including pathogens) are nonexistent or exist at population levels that do not disrupt ecological functioning, affect the sustainability of native species, cause economic harm, or negatively impact human health. .
2. When stocked or introduced, non-native species do not conflict with the recovery of native species, negatively influence ecosystem function, or detract from existing multiple uses.

Objectives

1. Eradicate or suppress invasive plant species on at least 300 acres annually.

Standards

1. Forest management actions must apply Best Management Practices (Region 3 Soil and Water Conservation Practices Handbook) to minimize the introduction or spread of invasive species, including:
 - a. Decontamination procedures on vehicles and equipment
 - b. Using weed-free products
2. Permitted pack-animal users must use pelletized feed.
3. Treatment approaches must use integrated pest management (IPM) practices to treat noxious and invasive species.

Guidelines

1. Equipment and materials should not be stored or staged in areas infested with invasive weeds or other non-native species.
2. Certified weed-free seed should be used in burned areas and should use locally chipped and shredded woody materials for mulch or, if necessary, use certified weed-free mulch.
3. Measures should be taken to prevent entrapment of fish and aquatic organisms and the spread of parasites or disease, when drafting water from streams or other water bodies (Refer to Preventing Spread of Aquatic Invasive Organisms Common to the Southwestern Region Technical Guidelines for Fire Operations, Interagency Guidance Rev. August 2009).

4. Management activities should implement invasive species prevention procedures to control irruptive outbreaks of insect and disease species that impact ecosystem function.

Management Approaches

1. Coordinate with other agencies and pursue partnerships to manage invasive species.
2. Educate and inform the public to prevent the introduction and limit the spread of invasive species.
3. Encourage research on invasive species and pathogens by universities and other organizations and agencies. Coordinate with university research and programs such as the Cooperative Extension Service through New Mexico State University.
4. Use the most recent New Mexico Department of Agriculture's "Noxious Weed Memo and List" to identify and prioritize invasive plant management needs.
5. Strive to restore native species in treated areas to minimize the potential colonization by invasive species.
6. As part of project implementation, encourage the reporting and recording of populations of invasive species found within the project area. Geographic Information Systems (GIS) is the preferred database of record.
7. Establish a program to address invasive plant species utilizing integrated pest management strategies.
8. Encourage public land users to inspect and clean motorized and mechanized trail vehicles of weeds and their seeds before recreating on public lands.
9. Encourage fishers and hunters to prevent the introduction and spread of invasive species by inspecting their equipment for invasive species and taking preventative measures (e.g., do not use felt-sole wading boots).
10. Encourage public pack-animal users to use pelletized, weed-free feed.

4.5 At-Risk Species

Description

At-risk species consist of 1) federal recognized threatened, endangered, proposed, and candidate species and 2) species of conservation concern (SCC). SCC are species native to, and known to occur in, the plan areas; and for which there is substantial concern about the species ability to persist in the plan area. A total of 36 at-risk species were identified, four federally recognized and 32 SCC.

Desired Conditions

1. Ecological conditions (physical and biotic) contribute to the survival and recovery of federally-listed, proposed, and candidate species; preclude the need for listing new species; and allow for the persistence of Species of Conservation Concern (SCC).

Guidelines

1. All authorized activities should be designed and implemented to address threats to critical life cycle needs for at-risk wildlife species, including:

- a. Timing restrictions to encourage reproductive success;
 - b. Prevention of introduction of invasive, competing, or predatory species;
 - c. Prevention of introduction of pathogens leading to population impacts; and
 - d. Creation or removal of obstructions that may alter natural migration or directly cause mortality.
2. Project activities and special uses occurring within federally-designated Critical Habitat must integrate habitat management objectives and species protection measures from the most recent approved US Fish and Wildlife Service (USFWS) recovery plan. Deviation from recovery plans may occur through consultation with USFWS.
 3. Potential impacts to at-risk species and their habitats should be evaluated prior to any management activities to minimize impacts. ~~If existing data is inadequate, this should include conducting surveys of the project area to determine species presence.~~
 4. The forest should use the most current ecological guidelines to improve nesting conditions for Goshawk (*Accipiter gentilis*):
 - a. A minimum of three goshawk nest areas and three replacement nest areas should be located per goshawk territory. Goshawk nest and replacement nest areas should generally be located in drainages, at the base of slopes, and on northerly (northwest to northeast) aspects. Nest areas should generally be 25 to 30 acres in size.
 - b. Goshawk post-fledgling areas of approximately 420 acres in size should be designated surrounding nest sites.
 - c. In goshawk foraging areas and post-fledgling family areas, groups of three to five reserve trees should be retained within management created openings greater than 1 acre in ponderosa pine-evergreen oak and dry mixed-conifer communities, and six reserve trees should be retained within management created openings greater than 0.5 acre in wet mixed-conifer and spruce-fir communities.
 - d. In occupied goshawk nest areas, human presence should be minimized between March 1 and September 30 (per Guideline 1a in this section).
 5. Activities along cliff faces, rock features, and other known nesting sites of at-risk bird species should be minimized during nesting season from March 1 through August 15 (per Guideline 1a in this section).
 6. Heavy equipment should be kept out of streams during spawning, incubation, and emergence periods of aquatic at-risk species (per Guideline 1a in this section).
 7. Management of cold water streams with populations of at-risk species should include adequate vegetation cover and width-to-depth ratio to move towards a seven-day avg. maximum water temperature of less than 17.8 degrees Celsius.

Management Approaches

1. Work collaboratively with other agencies, universities, and non-government organizations for the research and management of at-risk species. Emphasis is placed on the protection and restoration of key habitats and habitat features that lead to their recovery and persistence.
2. Strive to work with partners to promote public education and valuing of the at-risk species on the forests.

3. Prior to management actions, conduct floristic surveys to identify at-risk plant species in areas with the following features:
 - a. Limestone outcropping
 - b. Gypsum soils
 - c. Sandstone blended with Todilto gypsum or limestone
 - d. Gray to red shales and clays of the Mancos and Chinle formations in piñon-juniper woodlands
 - e. Volcanic pumice and unconsolidated pyroclastic ash in piñon-juniper woodland and lower montane coniferous forests
4. Use guidance from regional or local species conservation agreements, assessments, strategies, or guidelines to improve the status of at-risk species.
5. As part of project implementation, encourage the reporting and recording of populations of at-risk species found within the project area. Strive to record new populations of at-risk species. Geographic Information Systems (GIS) is the preferred database of record.
6. Potentially restrict the harvest of green fuelwood in areas that may impact at-risk species.
7. To provide sufficient ground cover and forage for at-risk species in alpine and tundra ERUs, consider maintaining less than 20% forage utilization by domestic livestock prior to July 21, or delay entry until July 22.
8. Consider recreational shooting restrictions in areas that may cause harm to at-risk species.

5 Soil Resources

Description

Soil forms the foundations of life as vegetation conditions and resiliency can be directly linked to soils. Soils within the SFNF include a wide variety of taxonomic classifications, reflecting the influences of several separate, but interacting soil forming factors including parent material, climate, topography, and organisms over time. As a result, soil characteristics range from shallow, weakly developed, rocky soils on plateaus, mesas, cliffs, escarpments, and ridges to deeper, more productive soils on alluvial fans, plains, and in valley bottoms.

Desired Conditions

1. Soil productivity, function, and inherent physical, chemical, and biological processes remain intact or are enhanced. Soils can readily absorb, store, and transmit water vertically and horizontally; accept, hold, and release nutrients; and resist erosion.
2. Vegetative cover and litter are distributed across the soil surface in adequate amounts to limit erosion and contribute to soil deposition and development. Soil cover and herbaceous vegetation protect soil, facilitate infiltration, and contribute to plant and animal diversity and ecosystem function.
3. In forested areas, logs and other woody material are distributed across the soil surface to facilitate soil productivity and maintain key habitat features.
4. Relatively undisturbed biological soil crusts (i.e., soil consisting of cyanobacteria, lichens, mosses, and algae organisms) are present or reestablished where the potential exists.
5. Soil productivity is not inhibited by non-native invasive plant species.
6. Soils are free from contaminants that could alter ecosystem integrity or affect public health.
7. Soils do not exhibit excessive or unnatural signs of erosion (e.g. pedestaling, rills, gullies).

Standards

1. Best Management Practices (Soil and Water Conservation Practices Handbook, Region 3) will be applied to all ground disturbing activities to ensure long-term soil productivity and condition.

Guidelines

1. Ground-disturbing management activities should be designed to minimize short-term impacts to soil resources (e.g., soil compaction and soil loss).
2. During forest management activities such as thinning and prescribed fire, large woody material should be retained to meet desired conditions relevant to the Ecological Response Unit (ERU) to support nutrient cycling.
3. Mechanized, ground-based vegetation management activities such as skidding and mastication should be limited to slopes less than 40 percent to prevent deterioration of soil condition including the ability to resist erosion, infiltrate water, and recycle nutrients.
4. In project areas where ground disturbance could affect biological soil crusts, select areas should be identified and protected to allow soil crusts to repopulate after project activities are completed.

5. In areas where soils have a severe erosion hazard rating or are poorly drained or saturated, new activities that encourage concentrated use (e.g., log landings, stock tanks, mineral blocks, corrals, and cattle collection areas) should be avoided.

Management Approaches

1. Work collaboratively with other agencies and groups that facilitate soil conservation projects.
2. Educate the public on the importance of staying on trails and not disturbing natural plant communities including biological soil crusts (e.g., Don't Bust the Crust!).
3. Update the Terrestrial Ecosystem Survey (USDA FS Santa Fe NF 1987) which provides the basis for planning project activities. Work with the Natural Resources Conservation Service and other partners to share data and improve existing soil information, especially after large-scale soil disturbances.
4. Work to improve unsatisfactory soil condition ratings (as defined by TEUI) where management has resulted in degraded conditions.
5. Work to mitigate or restore negative impacts in areas where concentrated use occurs on soils with severe erosion hazard rating or are poorly drained or saturated.

6 Air

Description

Air quality on the Santa Fe NF includes values such as fresh air and amazing views. Pollution (e.g., industrial sources, dust, and smoke from wildfires) generated both on and off the forest can impact these values. Other impacts may include pollution, such as fertilization or acid deposition, which ultimately affect other forest resources (e.g., species, water quality).

Desired Conditions

1. Air quality meets or surpasses New Mexico and federal ambient air quality standards
2. Visibility in designated Wilderness Areas (Class I and sensitive Class II areas) is free of anthropogenic (human-caused) impacts.
3. Water chemistry and biotic components are not impacted by atmospheric deposition of pollutants.

Guidelines

1. Dust abatement should occur during construction and road projects where dust is a potential effect.

Management Approaches

2. Work with agencies, organizations, tribes, and other entities to actively pursue actions designed to reduce the impacts of pollutants from sources within and outside the Forest. These measures may include:
 - a. Documenting evidence of potential air quality impacts that supports initial and continued compliance with local, New Mexico, and federal air quality regulations
 - b. Active membership in local and regional air quality protection stakeholder groups
 - c. Prevention of Significant Deterioration (PSD) permit review
 - d. Implementing air pollution mitigations where appropriate
 - e. Monitoring ambient air quality
 - f. Supporting visibility monitoring at San Pedro Parks
3. Deploy smoke monitors when there is potential for significant impacts to the public.

7 Traditional and Cultural Ways of Life

Description

Many communities around the Santa Fe National Forest have a long-standing history with the land. The way the Forest is used for economic, social, and religious purposes is an integral part of the culture and way of life for many of these traditional communities.

Common to All Subsections for Traditional and Cultural Ways of Life

Desired Conditions

1. The cultural and traditional needs of American Indian Tribes, Land Grant communities, and rural historic communities are valued, and traditional users have access to their sacred sites, traditional cultural properties, and other locations of traditional use (e.g. individual and group ceremonies, traditional activities, and the collection of forest products).
2. There are opportunities for solitude and privacy for ceremonial activities.
3. Forest resources important for cultural and traditional needs of traditional communities are available and sustainable.
4. Forest resources are available for subsistence practices and help support the economies of local communities.
5. The long history and ties of traditional and historic communities to Forest lands and resources is understood and appreciated.
6. Restoration activities affecting traditional communities meet common objectives across shared boundaries.

Management Approaches

1. Work with American Indian tribes, Land Grant communities, and rural historic communities to understand their needs and build respectful, collaborative relationships; to develop ways of accomplishing mutually desired conditions and objectives; and to collaborate in ecosystem restoration efforts.
2. Cooperatively develop interpretive and educational exhibits that focus on the history of the lands managed by the Santa Fe National Forest in collaboration with American Indian tribes, Land Grant communities, and rural historic communities to provide the public with a greater understanding and appreciation of our shared history, culture, and traditions.
3. Identify opportunities where locations on the Forest can provide a setting for the education of youth in culture, history, land stewardship, and the health benefits of outdoor activities.
4. Locations identified as important by American Indian tribes, Land Grant communities, and rural historic communities are acknowledged and are managed with an emphasis on the resilience and protection of natural and cultural resources.
5. Provide training for Forest employees to foster an understanding of the unique customs, traditions, and values of American Indian tribes, Land Grant communities, and rural historic communities.

7.1 Tribal Resources and Traditional Uses

Description

Lands managed by the Santa Fe NF have been used and continue to be used by many tribes for a variety of traditional cultural and religious activities. Some of these may include, but are not limited to, collection of forest products, hunting, religious pilgrimages, and visiting shrines and springs. The Santa Fe National Forest routinely consults with 14 federally recognized tribes that are based in New Mexico. The number of tribes who value places and properties on the Santa Fe NF for a variety of purposes is more than double that amount.

Desired Conditions

Use Desired Conditions for “Common to All Subsections for Traditional and Cultural Ways of Life.”

Standards

1. Maintain confidentiality of information and resources collected during consultation, unless permission to share information is given.

Guidelines

1. Requests for reburial of American Indian human remains and cultural items by Tribes should be accommodated.
2. Requests for temporary closure orders for cultural and traditional purposes should be accommodated.
3. Consultation with Tribes should occur at the early stages of planning and project design to include Tribal perspectives, needs, concerns, and traditional knowledge.
4. Sacred sites and traditional cultural properties should be managed to preserve the character and use of these places.

Management Approaches

Use Management Approaches for “Common to All Subsections for Traditional and Cultural Ways of Life.”

1. Coordinate with American Indian tribes to develop collaborative proposals and implement projects of mutual benefit, across shared boundaries, and using available federally-authorized or advocated programs.
2. With tribal permission, identify sacred sites or traditional cultural properties and develop a strategy for appropriate recognition and management, including honoring the Tribes’ request for maintaining confidentiality.
3. Provide training to Forest employees to gain an understanding of the unique legal relationship between the Federal Government and Indian Tribes; American Indian laws, customs, traditions, and values; and the tools available for protecting and managing sacred sites and traditional cultural properties.
4. Tribal requests to collect threatened and endangered species are referred to the U.S. Fish and Wildlife Service, the agency responsible for issuing permits for listed threatened and endangered species.

5. Consider the physical and scenic integrity of high places that the Tribes regard as sacred sites, traditional cultural properties, or as part of important cultural landscapes when making project decisions or issuing special use authorizations regarding the approval, location, and maintenance of telecommunication sites, and the facilities within.

7.2 Land Grant Communities

Description

Traditional Hispanic communities have ties to use of Forest lands that were once “common lands” of lands grants. These lands provided land grant communities access to grazing land, stone resources, wood, game, other Forest products, and medicinal plants. Many of these communities formed close ties reflected in the development of social and ceremonial ties to land forms for secular and religious purposes.

Desired Conditions

Use Desired Conditions for “Common to All Subsections for Traditional and Cultural Ways of Life.”

Guidelines

1. Coordination with community land grant governing bodies should occur at the early stages of planning and project design to include local perspectives, needs, concerns, and traditional knowledge.
2. Fuel wood collection opportunities should be available to land grant communities, except in areas with resource concerns or in designated areas where such uses are prohibited.

Management Approaches

Use Management Approaches for “Common to All Subsections for Traditional and Cultural Ways of Life.”

1. Coordinate with community land grant governing bodies to develop collaborative proposals and implement projects of mutual benefit across shared boundaries.

7.3 Rural Historic Communities

Description

The Forest is surrounded by many rural communities who depend on its resources for both economic subsistence and the continuation of traditional and cultural practices. Some examples of these important practices include fuelwood gathering and acequias.

Desired Conditions

Use Desired Conditions for “Common to All Subsections for Traditional and Cultural Ways of Life.”

1. Acequias and other historic/traditional infrastructure are well maintained, properly functioning and provide for the needs of rural historic communities.

Guidelines

1. Coordination with acequia associations and rural historic community leaders should occur at the early stage of planning for restoration projects and other projects that may impact uses and resources of importance to these entities and their constituent communities.
2. Fuel wood collection opportunities should be made available to historic rural communities, except in areas with resource concerns or in designated areas where such uses are prohibited.
3. Acequia associations should be provided adequate access to repair, maintain, and improve acequia infrastructure located on National Forest lands.

Management Approaches

Use Management Approaches for “Common to All Subsections for Traditional and Cultural Ways of Life.”

1. Coordinate with acequia associations and rural historic community governing bodies to develop collaborative proposals and implement projects of mutual benefit across shared boundaries.
2. Develop approaches for rural historic communities to continue to practice occupational and subsistence based activities that are sensitive to environmental and cultural concerns

8 Cultural Resources and Archaeology

Description

The Forest contains historic properties and archaeological sites that demonstrate human occupation and use for approximately the past 12,000 years. Historic properties are abundant across the forest and typically described in four types: objects, structures, buildings, and sites. These properties are eligible to the National Register of Historic Places based on their importance to local, regional, or national history. The forest is important for the links it provides to history and as well as opportunities for continuation of traditional cultural and spiritual practices.

Desired Conditions

1. Cultural resources including archaeological sites, historic sites and traditional cultural properties are not threatened by human disturbances (e.g., vandalism, theft, and overuse).
2. Cultural resources including archaeological sites, historic sites, and traditional cultural properties are protected from the effects of wildland fire (prescribed and wildfire including human caused and natural ignitions) or other natural processes.
3. The visual and aesthetic setting and physical associations of significant sites remain undisturbed so that the cultural significance of the landscape and setting is maintained.
4. Historical sites with strong connections to living communities are preserved for cultural practices.
5. Cultural resource data is used for scientific research and public education.
6. The significant qualities of Priority Heritage Assets are protected from human disturbance and degradation.
7. Heritage-based recreation opportunities exist, such as exploration and interpretation opportunities at historic routes and locations (e.g., Camino Real del Tierra Adentro, Old Spanish Trail, Glorieta Battlefield).

Standards

1. Where management activities could damage significant cultural resources (e.g., archaeological sites, historic sites or traditional cultural properties), mitigation measures must be implemented.

Guidelines

1. Where human and natural caused disturbances damage significant cultural resources (e.g., archaeological sites, historic sites or traditional cultural properties), mitigation measures should be implemented.

Management Approaches

1. Maximize opportunities for partnerships and volunteerism with the Heritage program. Cooperate with local, State, and Federal agencies, as well as institutions and local tribes in accomplishing program goals and objectives.
2. Collaborate with American Indian tribes and other traditional communities to manage historic sites and other traditional areas of importance.

3. Collaborate with American Indian tribes and other traditional communities to identify mitigation measures for historic properties, TCPs, and cultural landscapes during management activities.
4. Work with partners such as the American Indian tribes, NM HPD SiteWatch program, Archaeological Society of NM, National Park Service, and local museums of to identify, study, protect, and monitor sites and artifact collections.
5. Improve relationships with American Indian tribes and other traditional communities.
6. Pursue new and update existing Memoranda of Understanding with American Indian tribes as needed.
7. Heritage programs, interpretive presentations, publications, and interactive learning opportunities provide the public with opportunities to learn about, understand, and experience the Forest's prehistory and history.
8. Maintain the Santa Fe National Forest Site Stewardship program through assistance, support and training to provide volunteer opportunities to provide for the protection of significant cultural resources.
9. Maintain the Passport in Time program or develop similar opportunities for the public to assist the Forest in the protection, management and documentation of significant cultural resources.
10. Update the Forest Overview and Cultural Resources Planning Assessment into a comprehensive document to include a synthesis of known data on the Forest as well as lists of priorities for nonproject survey, National Register nominations, site stabilization, interpretation and public involvement.
11. Consider restoration of select historic structures for appropriate recreation or interpretive use.
12. It is suggested to nominate significant cultural resources to the National Register of Historic Places.
13. Conduct non-compliance cultural resource inventory.

9 Forest Products

Description

There is demand for a wide range of forest products, including both saw-logs used to for lumber and smaller forest products (e.g., vigas, latillas, coyote fencing) which have significance for both their traditional and cultural importance as well as their economic contributions. Fuelwood is also keenly important for heating families' homes. Mechanized harvesting is an important tool for the restoration of vegetation to desired conditions but small-scale harvesting also occurs by hand or with chainsaws.

National Forest Management Act timber requirements as per FSH1909.12 Chapter 60 still need to be added to this section.

Desired Conditions

1. A sustainable supply of commodities, including timber, fuelwood, medicinal herbs, boughs, wildflowers, mushrooms, grasses, seeds, nuts, and cones, are available to businesses and individuals.
2. Restoration and maintenance treatments using private and commercial timber harvest contribute to watershed health, wildlife habitat enhancement, small and large business and employment opportunities, and provide wood products.
3. Forest products support traditional lifestyles and generational ties to the land.
4. Harvest of dead and dying trees balance economic value with the needs of wildlife habitat, soil productivity, and ecosystem functions.

Objectives

1. Provide at least 150,000 CCF (hundred cubic feet) of timber per decade to contribute to local forest product industry.

Standards

1. Timber harvest methods must follow best management practices to protect soil and watershed function (FSH 2509.22 - Soil and Water Conservation Practices Handbook, FS-990A).
2. Timber restocking levels must be defined by a site-specific silvicultural prescription for a project treatment unit and determined to be adequate depending on the project objectives and desired conditions for the ERU.
3. In riparian management zones, silvicultural practices (e.g., pre-commercial thinning, planting, or prescribed burning) necessary to move toward vegetation and fuels management desired conditions, must not result in long-term impaired soil function, degraded aquatic ecosystems, or adverse effects to threatened or endangered species.

Guidelines

1. Forest treatments should focus on uneven-aged management using restoration principles in frequent-fire Ecological Response Units (ERUs). Desired forest structure should consist of approximately equal amounts of small, medium, and large tree groupings with openings and interspaces.
2. Forest treatments should use the best available science to reduce the likelihood of uncharacteristic insect and disease outbreaks (per Guideline 4 in Wildlife: Non-native and Invasive Species).
3. Even-aged harvest should be used where determined to be appropriate based on site specific conditions and the desired conditions for vegetation, wildlife habitat, scenery and other resources. Maximum size of openings should be limited to 40 acres, unless site specific conditions require larger openings (e.g., aspen regeneration, forest health, meadow restoration, and achieving desired ecological conditions).
4. Natural or artificial tree regeneration should meet vegetative and wildlife desired conditions. In some instances it is acceptable not to restock or restock at low tree densities (e.g., when stands are treated to reduce fuel loadings, to create openings for scenic vistas, or to prevent encroaching trees to meet desired vegetation or wildlife habitat conditions).
5. Designation of firewood areas should consider the potential impacts to piñon nut crops and other resource concerns.
6. Snag retention should meet minimum wildlife requirements.
7. Log landing areas should be located outside of designated sensitive land areas (e.g., riparian areas, wetlands and natural meadows, archeological sites, threatened and endangered habitat, and along concern Level I (SMS) roads). When landings must be located in these areas effects to the sensitive resource will be mitigated.
8. Timber harvests may include uneven- or even-aged methods that reflect the scale of natural disturbances and should be designed to achieve desired conditions (e.g., size class distribution, species composition, patch size, fuel reduction, insect and disease).
9. Timber harvest and mechanical fuels treatments should be designed to meet the minimum wildlife habitat requirements (e.g., snags, large woody debris). If these attributes were not present in the stand before the activity, treatments should be designed to help meet those standards in the future.

Management Approaches

1. Evaluate stands for reforestation needs.
2. Site preparation can be accomplished by mechanical, prescribed fire, or other methods as best suits site conditions.
3. Use thinning techniques to control tree stocking as identified in management objectives in stand specific prescriptions.
4. Designate stands of mature or over-mature piñon for the gathering of piñon nuts and prohibit the harvest of firewood in these stands.
5. Evaluate the impact of pests on specific forest stands and set management goals to mitigate these through the use of resistant tree species, maintenance of species diversity, removal of damaged trees, and pesticides or other types of treatments.
6. Develop pest control plans with forest health specialists that contain appropriate mitigation measures (per Management Approach 5 in this section) and monitoring procedures. Monitoring procedures might include:
 - a. Measure effectiveness of treated areas

- b. Determine effects on non-target organisms
 - c. Determine effects on water quality
 - d. Determine effects of pesticide that enters the soil or air.
7. Consider treatments within infrequent-fire ERUs for ecological and socioeconomic benefits.

Draft

10 Range and Grazing

Description

Grazing is mandated through Congressional legislation (Multiple Use and Sustained Yields Act of 1960, Forest and Rangeland Planning act of 1974, Federal Land Policy and Management Act of 1976, and Forest Management Act of 1976). Grazing (primarily cattle) contributes to the livelihood of permittees and the local economy and is also an important traditional activity rooted in a rich history that predates the creation of the Santa Fe National Forest or even the United States. As of 2016, the Santa Fe National Forest administers 74 active grazing allotments serving 250 permittees on five districts.

Desired Conditions

1. Sustainable grazing practices preserve cultural traditions, do not cause long-term negative impacts to plant and animal communities, and helps support local economies.
2. Rangeland is resilient to disturbances and, fluctuations and extremes in the natural environment.
3. Rangeland includes a diverse and sustainable number of native species, and invasive species are nonexistent or exist at population levels that do not disrupt ecological functioning, affect the sustainability of native species, cause economic harm, or negatively impact human health.
4. Wetland and riparian areas within rangelands consist of native obligate wetland species and a diversity of communities that are associated with the riparian complex as defined by their respective Terrestrial Ecological Units (TEU).
5. Range infrastructure prevents livestock from negatively impacting forest resources.

Objectives

1. Improve or reconstruct at least five percent of the Forest's range infrastructure that is in poor or non-functional condition annually.

Standards

1. ~~An Allotment must comply with permit conditions before an Annual Operating Instruction (AOI) is signed.~~ If riparian conditions are found to be degraded over previous issuance of permit, the permit must be adjusted to address resource concern prior to approval.
2. Annual Operating Instruction requirements (e.g., livestock numbers, turn out, or duration of grazing) must be based on range readiness, condition, utilization, compliance with permits, and must be balanced with allotment capacity and other resource concerns. Seasonal AOIs will be adjusted as warranted by recent weather and range condition.
3. Grazing of domestic sheep and goats must not be authorized in areas of current bighorn sheep habitat to prevent the spread of disease between domestic and wild populations.
4. New and reconstructed range improvements must be designed to prevent wildlife entrapment and provide safe egress for wildlife (e.g., escape ramps in water troughs and cattle guards).

Guidelines

1. Grazing management practices should be designed to maintain or promote ground cover appropriate to the site potential for the ecological response unit (ERU), and retain forage and cover for native wildlife needs.
2. Grazing management practices should maintain stubble heights of at least 8-inches in riparian and at least 4-inches in the uplands to maintain proper soil and vegetation function and condition.
3. Upland forage utilization should be at a moderate level or conservative intensity (less than 30 percent of the primary forage species) to allow for annual native vegetative regrowth and plant resiliency. Exceptions may be allowed to meet objectives related to scientific studies, fuels reduction, invasive plant control, or other resource desired conditions.
4. Riparian forage utilization should not exceed 15 percent for herbaceous vegetation and 5 percent for woody vegetation to maintain or improve canopy cover of native obligate and facultative wetland species (native riparian/wetland herbaceous and woody species) in order to sustain proper stream channel morphology and floodplain function.
5. New range infrastructure should not be developed within 100-feet of stream banks and wetlands unless necessary for resource enhancement or protection.
6. New and reconstructed allotment fences should allow migration and passage of wildlife except when specifically designed to exclude wildlife or protect human health and safety.
7. When designated trails intersect with allotment fences, accessible pass-through areas should be provided to allow for easier passage for recreation users, unless it interferes with range management and resource protection.
8. Salt or mineral supplements should not be placed within a half-mile of riparian or wetland areas and should not occur on or adjacent to known populations of rare plant species, habitat features critical for at-risk species (species of conservation of concern, threatened, or endangered species), known archeological sites and other areas where livestock concentrations are undesired.
9. To prevent the spread of Chytrid fungus, no new earthen stock tanks should be constructed.

Management Approaches

1. Range managers use a cooperative approach, work with permittees and other agencies, and develop partnerships among permittees and other stakeholders to facilitate flexibility and balance permitted use.
2. Acknowledge the importance of grazing as a traditional and cultural practice in northern NM and provide educational opportunities for Forest Service staff and the public about its value.
3. Consider socio-economic impacts to the permittee when adjusting livestock numbers .
4. Consider an adaptive management approach to manage range in a manner that promotes ecosystem resiliency, sustainability, and species diversity based on changes in range conditions, climate, and other resource desired conditions. Monitoring is essential to manage adaptively. (see monitoring plan)
5. Permittee investment will be encouraged by giving “range betterment” funding priority to projects that contain contributions by the grazing permittee.
6. Use the interagency Range Health Assessment or a similar assessment to measure range condition.
7. New water developments should use efficient rain catchment designs.

11 Recreation

Description

The Forest provides a diversity of outdoor recreation opportunities. The most popular include hiking and walking, viewing natural features, viewing wildlife, relaxing, driving for pleasure, nature study, cross-country skiing, fishing, and downhill skiing. Other important recreation activities include motorized recreation, mountain biking, rock climbing, recreational shooting, hang gliding, camping (both in campgrounds and dispersed), and emerging new types of recreation (e.g., zip lining, geo-caching, etc.) Recreation on the forest connects people with nature through a variety of settings and activities.

Common to All Subsections for Recreation

Desired Conditions

1. The unique cultural, historical, and ecological resources of the Forest are featured through recreation opportunities, education, and interpretation. Visitors are connected to the importance of the past, present, and future of the Forest.
2. Recreation opportunities are consistent with dispersed and developed recreation settings, as defined by the Recreation Opportunity Spectrum.
3. Recreation opportunities are diverse and adaptable to changes in recreation use and trends.
4. The quality, location, and variety of recreation opportunities satisfies visitor desires and expectations while protecting Forest resources.
5. Recreation use levels are compatible with multiple uses (e.g. timber harvest, water quality, wildlife, historic properties, etc.).
6. Recreation activities complement and support local economies and tourism.
7. The number of special use authorizations, including outfitters and guides, balances public demand with Forest resources.
8. Conflicts among various recreation users and with other forest users are rare and easily resolved.
9. Vandalism, theft, illegal activity, trash dumping, and resource damage at recreation sites or from recreation uses are nonexistent.

Guidelines

1. Management activities for all resources should be consistent with desired ROS settings.
2. Recreation developments and improvements should be planned, designed, and managed for activities and capacities that minimize long-term resource damage.
3. New developed campsites should only be designated when necessary to reduce resource damage.
4. Organized group events should occur in designated group sites, unless authorized by special use permit.

Management Approaches

1. Develop partnerships and collaboration with agencies, groups, communities, volunteers, permit holders, and other individuals to increase forest stewardship, ecological awareness, volunteerism,

user satisfaction, promote a sustainable recreation program, and support local recreation-based economic development.

2. Promote established programs and develop new conservation education programs at schools, youth activities, fairs, and volunteer events that help connect people to nature, reach underserved populations, and encourage responsible use of natural resources.
3. Collaborate with livestock permittees and recreationists to resolve conflicts.
4. Provide multilingual interpretation in recreation areas popular with non-English speaking visitors.
5. Incorporate information technology (e.g., QR-codes, web addresses, interactive maps) into signs and interpretive materials to direct public to additional information.
6. Educate the public on land stewardship using minimum impact principles (e.g., Leave No Trace, Tread Lightly, Don't Bust the Crust!).
7. Develop and implement a plan for a Forest-wide trail system.
8. Issue closure orders to mitigate excessive resource damage.
9. Consider recreational shooting restrictions in areas that may cause harm to species of conservation concern, cultural resources (e.g. rock art and other archaeological artifacts), or endanger public safety (e.g. high-use areas).
10. Use sustainable operations at developed recreation sites (e.g., recycling receptacles, electric maintenance vehicles, etc.).

11.1 Developed Recreation

Description

Developed recreation occurs in developed Forest Service sites, such as campgrounds, picnic areas, or fishing access areas.

Desired Conditions

Use Desired Conditions for "Common to All Subsections for Recreation"

1. Developed recreation areas are safe, well-organized, and capable of supporting concentrated visitor use. The number and size of constructed facilities are appropriate for the use level and activity types that occur at each site.
2. Developed campsites meet the minimum needs of vehicle-based camping. The overall capacity of sites meets demand in high use seasons, including providing for large groups.
3. Recreation fees are consistent across the Forest and based on the amenities provided.

Objectives

1. Reduce the current developed recreation deferred maintenance backlog by 20 percent within 15 years of plan approval.

Standards

1. Permits for isolated cabins will not be renewed when expired.

2. Recreation residences located in 100-year floodplains will not be rebuilt if destroyed by fire, flooding, or natural disaster.

Management Approaches

Use Management Approaches for “Common to All Subsections for Recreation”

1. Assess the sustainability of the developed recreation program and prioritize sites identified as unsustainable for decommissioning, closing, or repurposing facilities.
2. Determine the operation or closure of a site based on volume of use, resource protection, opportunities for public-private partnerships, equitable geographic distribution, and operating costs.
3. Adaptively manage recreation facilities to shift limited program resources to prioritized sites.
4. Install or replace trash and food boxes with wildlife-resistant models.
5. Evaluate existing facilities (e.g. fire towers, cabins, and recreation residences) for possible repurposing as recreation rentals.

11.2 Dispersed Recreation

Description

Dispersed recreation occurs throughout the forest outside of developed Forest Service recreation sites.

Desired Conditions

Use Desired Conditions for “Common to All Subsections for Recreation”

1. Dispersed recreation areas provide visitors with natural, tranquil settings.
2. The design, construction, and maintenance of trails are consistent with user demands, enhance the recreation experience, diminish user conflicts, and minimize damage to other resources.
3. The trail system provides a variety of opportunities and settings for visitors while being sustainable with minimal maintenance needs.
4. Dispersed recreation activities do not impact the quality of natural habitats, including riparian areas, streams, lakes, and wetlands

Standards

1. Motorized uses are prohibited in Primitive ROS settings.
2. Motorized uses are prohibited in Semi-primitive Non-motorized ROS settings, except for necessary administrative activities, permitted activities, and emergency access.
3. In Semi-primitive Non-motorized ROS settings, no new permanent motorized routes or areas shall be constructed or designated. Temporary motorized routes or road construction in Semi-primitive Non-motorized settings must be rehabilitated within two years of project completion.

4. Impacts to recreation opportunities resulting from the construction of temporary roads, facilities, and structures needed for management activities must be mitigated upon completion of the project.

Guidelines

Use Guidelines for “Common to All Subsections for Recreation”

1. Trail markings, kiosks, and interpretive signage should be designed to complement the scenic and cultural character of the surrounding landscape.
2. When trails intersect with fences, recreation user-specific pass-through areas should be provided when possible to allow for easier passage.
3. Trails should be sustainably designed, constructed, rerouted, or maintained using current best practices.
4. National Forest System trails should not be used for management activities that negatively impact trail conditions, unless alternatives entail greater resource damage. Adverse impacts to system trails should be mitigated upon project completion.
5. Trails that adversely impact cultural resources or sensitive wildlife habitats should be closed or alternative travel routes should be developed.
6. Designation of new motorized trails should connect to existing roads, protect open space, and protect natural and cultural resources.
7. When closing or mitigating adverse effects to dispersed recreation areas, native vegetation and natural barriers should be used.

Management Approaches

Use Management Approaches for “Common to All Subsections for Recreation”

1. Educational techniques (e.g., brochures, signs, websites, and social media) are used to enhance visitor knowledge of proper non-motorized and motorized trail use etiquette.
2. Non-motorized cross-country travel other than hikers should be discouraged and directed to National Forest System trails.
3. Dispersed camping should be discouraged near cultural sites, sensitive wildlife areas, interpretive sites, and water resources.
4. Barriers and signage should be used to control unauthorized use in areas with a high potential for illegal cross-country motorized vehicle use.
5. Dispersed recreation areas should be closed or effects mitigated when:
 - a. Campsite conditions have deteriorated
 - b. There are persistent user conflicts; and/or
 - c. Unacceptable environmental damage is occurring.
6. Information should be posted to redirect use and encourage public compliance in rehabilitation efforts.

7. Where forage is limited, information should be provided to encourage overnight campers with saddle or pack animals to carry weed-free cubed, pelleted, or rolled feed to limit overuse of the vegetation and discourage establishment or spread of noxious weeds.

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12 Roads and Facilities (Infrastructure)

12.1 Roads

Description

There are approximately 6,900 miles of roads on the Santa Fe National Forest. These roads have various maintenance levels, from those only available for administrative purposes (level 1), to those that offer a high level of comfort for users (level 5). Roads are maintained to best serve the public and unnecessary roads are returned to their natural condition.

Desired Conditions

1. The Forest's transportation system and infrastructure balance the needs for public access, land management, resource protection, user safety, and cost effectiveness while contributing to social and economic sustainability.
2. Where appropriate, the Forest's transportation system is interconnected with federal, state, and local public roads and trails to facilitate access to lands, infrastructure (e.g., buildings, recreation facilities, municipal water systems, reservoirs, electronic and communication sites, and utility lines), and inholdings.
3. Roads and trails designs have minimal adverse environmental impacts.
4. Unauthorized trails and unnecessary forest system roads or trails are not present on the landscape.
5. Roads are located away from watercourses.

Standards

1. Motor vehicle use by the public is only allowed as designated by the Motor Vehicle Use Map (MVUM). The MVUM identifies roads, trails, areas, and corridors where motorized travel is allowed.
2. Commercial users must maintain roads commensurate with their use to prevent resource damage and deterioration of the road system.
3. Road construction and maintenance must incorporate Best Management Practices (FSH 2509.22 - Soil and Water Conservation Practices Handbook, FS-990A).
4. No new motorized routes or areas shall be constructed in areas designated as Primitive in the Recreation Opportunity Spectrum (ROS).

Guidelines

1. Construction of temporary roads in areas designated as Semi-Primitive Non-Motorized (ROS) should be avoided unless required by a valid permitted activity or management action. If authorized, roads should be constructed and maintained at the lowest maintenance level needed for the intended use.
2. Bridges and transportation infrastructure found to serve as important habitat for at-risk wildlife should not be demolished unless demolition is necessary for safety along the travel route.
3. Forest roads, trails, and airstrips should have a water drainage system that minimizes delivering sediment and pollutants to water bodies.

4. New and existing roads intersecting streams and fish habitat should accommodate appropriate movement for fish and other aquatic organisms.
5. When a practical alternative does not exist, the footprint of new roads and trails constructed in the riparian area should be minimized.
6. Construction of new roads should be accompanied by a decommissioning action for other roads or trails in the same watershed that results in improved overall water quality. Reconstruction and rehabilitation of existing roads should be emphasized over new road construction.

Management Approaches

1. Inventory road conditions in impaired watersheds identified in the Watershed Classification Framework; noting water and road interactions, relevant structures, and channel type.
2. Prioritize decommissioning of roads and trails that impact flow regimes, are redundant routes, cause mass movement of soils and sediment, are built close to waterbodies, or have substantial negative impacts to at-risk species.
3. Identify and keep road and trail management objectives current for all roads and trails on the Forest's transportation system.
4. Recognize and mitigate or close roads impacted by landslides, rock falls, or other landslide movements and hazard trees.
5. When designing or maintaining bridges consider incorporating design elements that reduce mortality and are beneficial to wildlife (e.g., habitat connectivity, roost sites).

12.2 Facilities

Description

The Forest manages a variety of buildings and infrastructure for a variety of purposes. These include administrative facilities (offices, warehouses, employee housing, and fire facilities) and public recreational facilities (visitor centers, campground or picnic ground restrooms, storage buildings, etc.), associated water and wastewater treatment systems, dams, and communication towers.

Desired Conditions

1. Forest facilities (e.g., buildings, campgrounds, and water systems) provide for use of forest resources while protecting resources, health, and safety.
2. The construction and operation of facilities has minimal long-term impacts to soil and vegetation.
3. Surrounding vegetative conditions and building material aid in the protection of infrastructure from wildfire.
4. Facilities are energy-efficient and serve their intended purpose.

Objectives

1. Reduce energy intensity (British thermal unit (BTU) per gross square feet) from fiscal year 2015 baseline for all Forest facilities by an average of 2.5 percent annually by 2025.

Guidelines

1. New structures (e.g., buildings, campgrounds, and water systems) or other above ground facilities should adhere to scenic integrity objectives and should not be located in areas of Very High and High scenic integrity unless they are designed to blend-in with the general landscape.
2. Construction of new facilities in floodplains, wetlands, and other environmentally sensitive areas should be avoided. When a practical alternative does not exist, the amount and area of disturbance should be minimized.
3. Facility design and construction should consider wildlife impacts and include measures to prevent or mitigate wildlife mortality where possible.

Management Approaches

1. Clearing of vegetation along rights-of-way, facilities, and special use sites is limited to that which poses a hazard to the facility and its function.
2. Unneeded facilities are transferred to other uses or ownerships, or decommissioned and removed.

13 Lands and Realty

Description

This resource concerns management of the Forest's real estate, property rights, and boundaries. This broad-ranging resource area interacts with nearly every natural resource management discipline, and includes the purchase or exchange of lands, the identification and defense of Forest boundaries, and the authorization of the use of public lands by private entities.

13.1 Cross-Boundary Management (All Lands Approach)

Description

Ecological processes are seldom confined by administrative and jurisdictional boundaries, so the Forest recognize the impacts of management policies on adjacent lands, and vice versa.

Desired Conditions

1. The transition from Forest lands to adjacent lands with similar desired conditions is seamless and does not exhibit abrupt changes in visual or ecological integrity.
2. Naturally appearing landscapes are interconnected throughout the forest, benefitting wildlife habitat, watershed health, and recreational opportunities.

Management Approaches

1. Collaborative relationships with adjacent stakeholders and public land managers are actively encouraged in order to develop contiguous road and trail systems across multiple ownerships. Where possible acquire private lands to promote trail connectivity and manageability.

13.2 Land Status and Special Uses

Description

Forest lands include a diverse array of legal and administrative statuses, like easements that allow access to private inholdings and administratively designated areas with distinct boundaries. In other areas, private commercial ventures are allowed to operate pursuant to special use permits. Land status and special use permits allow for activities ranging from the construction of driveways and powerlines to the use of mountain tops for cell towers and ski resorts.

Desired Conditions

1. Land ownership patterns allow for accessibility, continuity, efficient management, and resource protection on and through Forest lands.
2. Roads, utilities, and communications sites and corridors are consolidated on existing or small rights-of-way to have minimal impacts on natural resources.
3. Road and trail easements enable public access to and within Forest lands.
4. Owners of private inholdings have reasonable and appropriate access through the Forest to their property.

5. Boundaries of areas with special management direction (e.g., designated Wilderness) are clearly marked at access points and where unauthorized use is likely to occur.

Standards

1. Authorize only one access route to each private property inholding. No new access points to private property will be authorized if a parcel is subdivided.
2. Convey easements only to local governments for access to parcels larger than 20 acres.
3. No new power distribution or communication lines will be authorized to parcels of private land located more than one-half mile from the nearest existing power or communication line, unless buried within an existing road or utility right-of-way.
4. Infrastructure serving private property must be located on private property, existing easement, or right-of-way.
5. Access reciprocity is required as a condition of new easement authorizations where travel through private land is desired to access adjacent Forest lands.
6. Diesel-powered generators will not be allowed at facilities operating under a Special Use Permit.
7. Easements or rights-of-way through Forest lands will only be granted for private properties situated inside of the official National Forest boundary.
8. Ground disturbing management activities must search for and protect existing land monuments.
9. Permits for utilities must incorporate requirements for road construction, reconstruction, and maintenance that minimize resource damage.

Guidelines

1. Opportunities for land acquisition should be pursued in areas with existing or desired easements or that would improve connectivity, and when volunteered by the landowner.
2. Rights-of-way for roads, utilities, and communications sites should maximize use of existing infrastructure before new uses are authorized, with the intent to minimize natural resource impacts.
3. New authorized power or other utility distribution or service lines should be buried if site conditions permit.
4. The Forest should proactively respond to threats to federally owned property rights (e.g., encroachment, trespass).

Management Approaches

1. Consult with local governments to synchronize Forest decisions for permits, leases, and easements with local planning and zoning ordinances where local and Forest objectives are complementary.
2. Encourage the protection of existing public access rights and the acquisition of new public access opportunities to Forest lands.
3. Update the existing landownership adjustment plan, which will identify lands desirable for acquisition, as well as identify parcels or areas as suitable for exchange or sale.

4. Easements should include public access in addition to administrative functions.
5. Road closure decisions over acquired easements should prioritize public access interests.

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14 Energy and Minerals

The Forest contains a variety of minerals desirable for extraction. This includes energy-producing minerals like oil, natural gas, and geothermal heat sources, and valuable mineral deposits like gold, silver and copper. The Forest also has renewable energy potential due to its solar, wind, and biomass resources.

14.1 Leasable Energy Minerals

Description

The Forest contains a number of mineral deposits and features that can be used to produce energy, including oil, natural gas, and geothermal heat sources. While the leasing of these minerals falls under the purview of the Bureau of Land Management, the Forest retains the ability to guide how surface impacts associated with extraction of these resources are managed.

Desired Conditions

6. Surface resource impacts resulting from mineral energy development do not have adverse long-term effects on ecosystem health or watershed conditions.
7. Reclamation of mineral energy extraction areas restores resource damage and remove public safety hazards.

Standards

8. Surface uses in extractive mineral energy operations must be controlled through plans of operation and permits which provide for the long-term protection and sustainability of all affected resources.
9. Oil and gas leasing, exploration and development may occur outside the oil and gas leasing management area only following site-specific NEPA analysis.
10. Standard requiring compliance with geothermal leasing ROD, if geothermal leasing is allowed (geothermal ROD to be issued sometime in spring 2017)

14.2 Alternative Energy

Description

This section covers alternative and renewable energy sources like wind, solar, and biomass.

Desired Conditions

11. Exploration, development, production and transmission of renewable energy resources contribute social and economic benefits to local communities and are conducted in a manner that minimizes adverse long-term impacts to Forest resources and uses, ecosystem health, and watershed conditions.

Management Approaches

12. Identify areas suitable for solar and wind energy based on energy potential, access, and impacts on other resources. Encourage development of wind and solar energy in these areas.
13. Incentivize renewable energy development in areas with the highest generation potential and fewest resource conflicts, by:

- a. providing financial incentives to developers, including less frequent adjustments to rent and longer phase-ins for other fees;
 - b. allowing standard bonds as opposed to bonds based on full reclamation costs;
 - c. awarding leases in these areas through competitive processes; and
 - d. streamlining the leasing process by, for example, granting applicants site control earlier;
14. Recognize and grant priority status to applications for utility developments in existing transmission corridors that transmit energy from renewable sources.
 15. Upon receipt of application for development of solar and wind energy facilities, consider modification of route designations and/or route relocation to accommodate development of these renewable energy-producing facilities.
 16. During project planning and design, determine feasibility, cost and benefits of using photovoltaic systems on administrative facilities, range improvements, resource monitoring, public safety, and recreation projects.

14.3 Minerals

Description

Mineral resources include locatable mineral deposits (e.g., gold, silver, copper, uranium, non-metallic minerals, and rare earth elements), leasable minerals (e.g., coal, oil, gas, oil shale, sodium, phosphate, potassium, geothermal, and sulfur), and mineral materials (e.g., sand, gravel, cinders, common building stone, flagstone).

Desired Conditions

17. Surface resource impacts resulting from mineral development do not have adverse long-term effects on ecosystem health or watershed conditions.
18. Reclamation of mineral areas restores resource damage and remove public safety hazards.

Standards

19. Surface uses in mineral operations must be controlled through plans of operation and permits which provide for the long-term protection and sustainability of all affected resources.
20. In mineral sites exceeding five acres, mined-out areas must be stabilized or reclaimed as new mine areas are opened.

Guidelines

21. If in the public interest, the responsible official should respond to requests for mineral materials through the NEPA process, advertised sale (if appropriate), and permit administration.
22. The potential to use sites for mineral collection areas or future exploration and development should be considered during the development of a reclamation plan.
23. If adits, shafts, and other mine workings are determined to be used by bats and other wildlife species, gating should be an alternative to destruction.

Management Approaches

24. Prior to the destruction of access to adits, shafts, and other mine workings, provide opportunities to record mineral resource information when safe.

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15 Scenic Resources

Description

Vision is the primary sense for most people and influences how people experience the landscape, the ecological features, and the human elements, which combine to give an area identity and contribute to a “sense of place”. People value scenery with natural appearing landscapes. Scenery varies depending on existing natural features including vegetation, water features, landform and geology, cultural features, and human alterations (e.g., buildings, structures, manipulations of the land or vegetation).

Desired Conditions

1. The forest contains a variety of ecologically sound, resilient and visually appealing forest landscapes that sustain scenic character in ways that contribute to visitors’ sense of place and connection with nature.
2. The Forest appears predominantly natural and includes cultural landscapes valued by forest users and local communities for their scenic and traditional values.
3. High quality scenery dominates the landscape in areas the public values highly for scenery (e.g., scenic byways, major roads and trails, developed recreation sites, and high scenic integrity areas such as Wildernesses and Wild and Scenic Rivers).
4. Scenery reflects ecosystem diversity, enhances recreation settings, and contributes to the quality of life for local residents and communities.
5. Scenery is maintained or adapts to changing conditions and supports ecological, social and economic sustainability on the forest and in the surrounding landscapes.

Objectives

1. Accomplish at least five management activities that enhance scenic resources, but for which scenery is not necessarily the primary project objective, every five years (e.g., restore grasslands and aspen, decommission unneeded system roads or rehabilitate unclassified routes, remove unnecessary fences, paint facilities along scenic byways, maintenance within communication sites and along right of ways, and address light pollution issues).

Guidelines

1. Constructed features, facilities, and management activity effects should blend with the natural appearing landscape. The concepts of form, line, color, texture, and pattern common to the desired scenic character being viewed should be applied during project planning and design.
2. Management activities should minimize visual disturbances and be consistent with or move the area towards achieving scenic integrity objectives (as defined by the Scenic Integrity Objective map).
 - a. In areas with very high scenic integrity objectives, the scenic character should have only minor, if any, deviations. The areas should appear unaltered and the majority of the area should be dominated by ecological changes.
 - b. In areas with high scenic integrity objectives, the scenic character should appear intact but may include deviations that are not evident (e.g., completely repeat the scenic attributes of size, shape, form, line, color, texture, or patterns common to the scenic character).

- c. In areas with moderate scenic integrity objectives, the scenic character may appear slightly altered. Management activities, manmade structures and facilities should not dominate the scenic character (e.g., repeat the scenic attributes of size, shape, form, line, color, texture, or patterns common to the scenic character).
 - d. In areas with low scenic integrity objectives, the scenic character may appear moderately altered. Management activities including manmade structures and facilities may begin to dominate the scenic character but use scenic attributes to blend into the landscape (e.g., repeat the scenic attributes of size, shape, form, line, color, texture, or patterns common to the scenic character).
3. Management activities that result in short-term impacts inconsistent with the scenic integrity objectives should achieve the scenic integrity objectives over the long-term. Short-term and long-term timeframes should be defined during site specific project planning.
4. Projects should include mitigation measures to address impacts to scenic resources.
5. Management activities that affect scenic quality should not be scheduled on weekends or holidays during the major recreation season, except in cases of wildland fire management or when doing so would otherwise not achieve project goals.
6. Effects to scenery from prescribed fire should be considered during project planning and implementation. Efforts should be made to minimize high intensity fire along areas valued highly by the public for scenery (as defined by concern level 1 travelways and use areas in the Scenery Management System), unless necessary to meet management objectives or ensure public safety.

Management Approaches

1. Cooperate with other entities, such as the New Mexico Department of Transportation, tribal and local governments, and commercial and private entities to protect scenic integrity on and adjacent to the national forest, including along scenic byways.
2. Provide the Scenery Management Inventory and Scenic Integrity Objective map to local adjacent and neighboring land management agencies for integration into projects and plans.
3. Develop public education opportunities and information about the importance and impacts of scenery.
4. Use the best environmental design practices to advance environmentally sustainable design solutions.
5. Use the Built Environment Image Guide in construction or reconstruction of Forest Service facilities to ensure consistency with the scenic character of the Southwestern Region
6. Rehabilitate areas where existing scenic integrity is lower than the scenic integrity map. Set priorities for rehabilitation considering the following:
 - a. Foreground (within 300 feet to ½ mile) of high public use areas has the highest priority;
 - b. Relative importance of the area and the amount of deviation from the scenic integrity objectives;
 - c. Length of time it would take natural processes to reduce the visual impacts so that they meet the scenic integrity objectives;
 - d. Length of time it will take rehabilitation measures to meet the scenic integrity objectives;
 - e. Benefits to other resource management objectives to accomplish rehabilitation; and

- f. Restoration of scenic integrity in areas where it has been negatively impacted as other project work is accomplished or funds are available.
7. Prior to vegetation work in developed recreation sites or administrative facilities, develop vegetation management plans that outline activities to sustain the desired scenic character and key visual elements over time.

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16 Designated Areas

Description

A designated area is an area or feature identified and managed to maintain its unique special character or purpose. These areas may be designated administratively or by Congress.

Examples of administratively designated areas are experimental forests, research natural areas, scenic byways, botanical areas, recommended wilderness areas, and significant caves. Examples of Congressionally designated areas are national heritage areas, national recreational areas, national scenic trails, wild and scenic rivers, and designated wilderness areas

All Designated Areas

Desired Conditions

1. Designated areas on the Forest retain the unique or special character and purpose for which they were designated.

16.1 Wilderness Areas

Description

The Forest has four Wilderness Areas; Chama River Canyon (50,300 acres, 2,900 acres on the Carson National Forest), San Pedro Parks (41,132 acres), Dome (5,200 acres), and Pecos (233,333 acres, 24,736 on the Carson National Forest). Wilderness areas are meant to be protected, have their wilderness character preserved, and administered for the use and enjoyment of the American people now and in the future. Wilderness areas are congressionally designated.

Desired Conditions

1. Wilderness is valued by a broad segment of the public for the variety of ecosystem services and values it provides; including clean air and water, large blocks of protected wildlife habitat, primitive recreation opportunities, and other intrinsic, experiential, and symbolic values.
2. Wilderness provides recreation opportunities where social encounters are infrequent and occur only with individuals or small groups so that there are opportunities for solitude. Visitors experience self-reliance, challenge, and risk while enjoying freedom to pursue non-motorized or mechanized activities with only the regulation necessary to protect wilderness character.
3. Wilderness represents an environment that is essentially an unmodified and natural landscape. Constructed features exist only when they reflect the historic and cultural landscape, when they are the minimum necessary for administration of the area as wilderness, or for the protection of resources.
4. Natural ecological processes are maintained with limited human intervention. Natural processes such as insect and disease and fires function in their natural ecological role. Invasive species are non-existent or in low abundance and do not disrupt ecological functions.

Objectives

1. Within ten years of plan approval, wilderness areas show improvement in the four qualities of wilderness character (untrammled, natural, undeveloped and opportunities for solitude and

primitive and unconfined recreation) as measured by a 60 percent score or better in upward reporting for Wilderness Stewardship Performance.

2. Within the life of the plan, at least ten miles of high-priority boundary line will be surveyed and posted.

Standards

1. Management of designated wilderness shall comply with the most recent version of their respective management plans, when they exist.
2. In designated wilderness, no more than 15 persons and 15 livestock are permitted within a single group unless otherwise noted in its management plan. Exceptions can include special use permits, formal agreements, emergency services, and management activities for maintaining wilderness character.
3. Research conducted in wilderness shall not have adverse effects to wilderness character.
4. Non-native species shall not be introduced into any wilderness area unless for fire recovery purposes. Maintenance of existing non-native sport fish populations may continue only without the aid of motorized or mechanized equipment.

Guidelines

1. Management activities should be consistent in the long-term with the scenic integrity objective of Very High.
2. A Minimum Requirements Analysis should be utilized when considering new activities and instances authorizing non-conforming uses.
3. Signage in wilderness should be limited to those that are essential for resource protection and user safety.
4. Wilderness boundaries should be clearly identified through signage at official entry points and needed locations (such as informal access points), with features such as trail maps, boundary markers, and consistent signage.
5. Intervention in natural processes through management actions should only occur where this would move the area towards desired conditions, preserve wilderness character, protect public health and safety within and adjacent to wilderness, or uphold other federal laws and regulations.
6. New trails constructed or designated in wilderness should be designed, built, and maintained as minimally to moderately developed (trail classes 1 or 2).
7. Non-conforming structures that are no longer in use and do not meet the desired conditions should be removed from wilderness.

Management Approaches

1. Collaborate with local partners, volunteers, Adopt-a-Trail organizations and other entities to maintain wilderness, including trails maintenance and construction.
2. Coordinate with the New Mexico Department of Game and Fish on management of wildlife within wilderness using techniques consistent with wilderness character.

3. Wilderness management is guided by the elements outlined in the Forest Service's Wilderness Stewardship Performance (WSP). This framework tracks how well the wilderness character is being preserved through measuring progress in ten elements selected by managers for each wilderness from a suite of possible options (e.g., management of fire, range, cultural resources, etc.).
4. When revising allotment management plans, encourage using non-motorized or non-mechanized practices (range riders) and minimizing structural development in wilderness.
5. Use adaptive management and corrective measures if overuse causes unacceptable resource damage or unacceptable loss of opportunities for solitude. Use proactive approaches in identifying and addressing visitor use management challenges before effects to resources become unacceptable.
6. Prioritize the decommissioning, realignment, or reconstruction of trails based on need, the amount of use it receives, and potential impacts on wilderness character and recreation opportunities.
7. Prevent unauthorized use in wilderness with methods such as education, law enforcement, barriers and trail design.
8. Dispatch a Resource Advisor-Fire Line (REAF) with a specialized knowledge of wilderness, or wilderness program specialist in the absence of a Wilderness REAF, to fires threatening wilderness.
9. Use interpretation and education to encourage visitors to adopt techniques, equipment, and ethics specific to wilderness.
10. In the Chama River Canyon Wilderness, educate boaters on relevant safety and resource protection regulations prior to entering the wilderness. Post these regulations at river access points and include in outfitter guide special use authorizations
11. Utilize news releases, postings, permit issuance, and individual visitor contacts to inform visitors of areas of concentrated resource damage and use restrictions.
12. Rehabilitate human-caused disturbed areas (e.g. compacted sites) that do not complement wilderness character to a natural appearance using native species or materials.
13. Reintroduce extirpated (locally extinct) native species given ecological conditions and social values.
14. Design and maintain trails in a sustainable manner to maintain wilderness character, reflect a primitive setting, and minimize impacts on wilderness, including trails leading into wilderness.

16.2 Recommended Wilderness Areas

Description

Recommended wilderness areas have not be designated as wilderness by Congress, but are managed to maintain their wilderness character.

Plan Components for recommended wilderness areas will be developed after the wilderness evaluation is final and there is a better understanding of whether there will be any recommended wilderness areas, and if there are, where they may be.

16.3 Inventoried Roadless Areas (IRAs)

Description

The Forest has 55 Inventoried Roadless Areas (IRAs). IRAs are relatively undisturbed areas that serve as a reference area to measure the effects of development on other parts of the landscape. Road construction, reconstruction, and timber harvest activities are limited within these areas to sustain the social and ecological roadless characteristics of each area. Inventoried Roadless Areas were designated in 2000 as part of an inventory of all National Forest System lands nationwide.

Desired Conditions

1. Inventoried Roadless Areas (IRAs) are large, unfragmented, and undeveloped tracts of land.
2. In IRAs, ecosystems are properly functioning and provide clean drinking water.
3. IRAs provide large, relatively undisturbed landscapes that are important to biological diversity and the long-term survival of many at-risk species. They serve as safeguards against the spread of invasive plant species and provide reference areas for study and research.
4. IRAs appear natural, have high scenic quality, and provide opportunities for dispersed recreation.

Guidelines

1. Management activities should maintain or improve the roadless character of the IRA.
2. IRAs should be managed for Primitive, Semi-Primitive Non-Motorized, and Semi-Primitive Motorized Recreation Opportunity Settings (ROS).
3. Management activities should be consistent with the scenic integrity objective of High.

Management Approaches

1. Prioritize roads in IRAs for road decommissioning.

16.4 Research Natural Areas

Description

The Forest has two established and one proposed Research Natural Areas (RNA); Monument Canyon (650 acres) and Mesita de los Ladrones (500 acres), Canada Bonito (proposed, 300 acres). RNAs are ecosystems in relatively pristine conditions and are designated to maintain these natural features. They are excellent for studying ecosystems or their component parts and for monitoring long-term ecological change. RNAs are administratively designated by the Regional Forester and the Research Station Director.

Desired Conditions

1. RNAs are natural appearing and ecological processes (e.g., plant succession, fire, and insect and disease) function with limited human influences.

2. RNAs are areas for the study of ecosystems and ecological processes, including succession, and serve as baseline areas for measuring ecological change from disturbances or stressors like climate change.

Standards

1. No surface occupancy for minerals, geothermal, or oil and gas extraction shall be allowed.
2. Vegetation manipulation or removal of forest products for commercial purposes and personal use (including firewood) shall not be permitted or authorized, unless it is necessary to maintain the ecological process or the natural characteristics for which the RNA was designated.
3. New trail construction shall not be permitted.
4. Special use permits must not be permitted, except for research that would not lead to long-term effects on the characteristics specific to the RNA.
5. Only non-motorized, day use recreational activities are allowed in the Canada Bonito and the Mesita de los Ladrones RNAs. Motorized use on roads shown as open in the MVUM shall be allowed in the Monument Canyon RNA.
6. New roads must not be constructed and closed roads shall not be opened.
7. Campfires are not allowed.
8. New utility corridors must not be permitted or authorized.

Guidelines

1. Management activities should be consistent with the scenic integrity objective of the RNA.

Management Approaches

1. Collaborate with appropriate agencies and universities regarding scientific opportunities of RNAs.
2. Encourage partnerships and volunteers to provide onsite interpretation and monitoring for the RNAs.
3. Mark the boundary of the RNA and use kiosks to educate the public about the RNA purpose, permitted, and prohibited activities.

16.5 Wild and Scenic Rivers

Description

The Forest has three Wild and Scenic Rivers; Rio Chama (21.6 miles designated as Wild, 3 miles designated as Scenic), East Fork Jemez (4 miles designated as Wild, 5 miles designated as Scenic, 2 miles designated as Recreational), and Pecos (Wild segment entirely within Pecos Wilderness). Wild and Scenic Rivers are meant to preserve outstanding free-flowing rivers, possess outstandingly remarkable scenic, recreational, geologic, fish and wildlife, historic, cultural, or other similar values and are meant to

be protected for the benefit and enjoyment of present and future generations. Wild and Scenic Rivers are congressionally designated.

16.5.1 Designated Rivers

Desired Conditions

1. Designated Wild and Scenic Rivers are free-flowing and possess the Outstandingly Remarkable Values (ORVs) for which they were designated.
2. Water-based recreation opportunities are enjoyed by the public, yet the majority of the riparian zones remain largely undisturbed from long-term recreational impacts (e.g., camping and access points).

Standards

1. Management of designated Wild, Scenic, and Recreational Rivers shall comply with the most recent version of their individual comprehensive river management plans (CRMP). The following CRMPs and any future versions shall be incorporated by reference and are part of the Forest Plan:
 - a. East Fork Jemez Wild and Scenic River Management Plan
 - b. Pecos Wild and Scenic River Management Plan
 - c. Rio Chama Management Plan
2. The classification for designated Wild and Scenic Rivers shall be maintained or enhanced when implementing projects.
3. Designated Wild and Scenic rivers shall be managed to protect or enhance ORVs.
4. Proposed water resources projects, including activities within the bed and banks and below the ordinary high water mark of the river, shall require a free flow analysis.
5. Road and motorized trail access to rivers must be consistent with river classification, travel management direction, and the recreation opportunity spectrum classification.
6. Existing or new mining activity must minimize surface disturbance, sedimentation, pollution, and visual impairment.
7. Within designated Wild segments, no new structures may be constructed.
8. Permit utility rights-of-way within designated Recreational and Scenic segments only when there are no alternatives.
9. Do not permit utility rights-of-way within designated Wild segments.

Guidelines

1. For Wild sections of the Rio Chama, Pecos River, and East Fork of the Jemez, rivers should
 - a. be kept free of impoundments,
 - b. meet or exceed State standards for water quality,
 - c. be accessible only by trail, and

- d. have shorelines kept in an essentially primitive condition (e.g., essentially free of structures, diversion works, and modifications of the waterway such as rip-rapping and channelization).
2. For Scenic sections of East Fork of the Jemez, the river should
 - a. remain free of impoundments,
 - b. have largely primitive shorelines and shoreline development, and
 - c. be accessible only at certain points by roads.
3. For Recreational sections of the Rio Chama and Pecos Rivers, when the rivers are paralleled by roads and have some development and resource management along its shorelines, they should provide for the waterway and its surroundings to be generally natural and riverine in appearance.
4. Mitigations should be implemented to protect and enhance ORVs, free flowing characteristics, and riparian habitats from range management activities in the Rio Chama Wild and Scenic River corridor.
5. Expansion of structural improvements in Recreational and Scenic segments (outside designated wilderness) should be allowed as long as they meet scenic integrity objectives and provide user access.
6. Management activities should be consistent with the scenic integrity objectives of:
 - a. Very High in designated Wild rivers,
 - b. High in designated Scenic rivers, and
 - c. Moderate to High in designated Recreational rivers.
7. Management activities should be consistent with the Recreation Opportunity Spectrum classes of:
 - a. Semi-Primitive Non-Motorized to Semi-Primitive Motorized in designated Scenic rivers, and,
 - b. Semi-Primitive to Roaded Natural in designated Recreational rivers.

Management Approaches

1. Coordinate planning and management of the boating aspects of the Rio Chama with the Bureau of Land Management (BLM), in consultation with the New Mexico Energy, Minerals, and Natural Resources Department; New Mexico Department of Game and Fish; and U.S. Fish and Wildlife Service.

16.5.2 Eligible Rivers

Plan Components for eligible Wild and Scenic Rivers will be developed after these rivers have been identified as part of FSH 1909.12 Chapter 80 and there is a better understanding of whether there will be any eligible Wild and Scenic rivers, and if there are, where they may be.

16.6 Continental Divide National Scenic Trail

Description

The Forest has 25.7 miles of the Continental Divide National Scenic Trail on the Coyote and Cuba Ranger Districts. The trail was designated by Congress in 1978.

Desired Conditions

1. The CDT is a well-defined trail in a highly scenic setting along the Continental Divide that provides for high-quality primitive hiking, horseback riding opportunities, and other compatible non-motorized trail activities. Significant scenic, natural, historic, and cultural resources along the CDT's corridor are conserved.
2. Viewsheds from the CDT have high scenic values. The CDT provides visitors with expansive views of the natural landscapes along the Continental Divide. The foreground of the CDT (up to 0.5 mile on either side) appears natural and generally unaltered by human activities. The potential to view wildlife is high, and evidence of ecological processes such as fire as well as insects and disease exist.
3. The CDT has access points that provide various opportunities to select the type of terrain, scenery, and trail length (e.g., ranging from long-distance to day use) that best provide for compatible outdoor recreation experiences.
 - a. Wild and remote backcountry segments of the CDT provide opportunities for solitude, immersion in natural landscapes, and primitive outdoor recreation.
 - b. Front-country and easily accessible trail segments complement local community interests and needs and help contribute to their sense of place.
4. Use conflicts among trail users are infrequent.
5. The CDT is well maintained, signed, and passable. Alternate routes are made available in the case of temporary closures resulting from natural events (e.g., fire or flood) or land management activities.

Objectives

1. Unconnected segments (five miles on NFS lands and approximately seven miles within San Pedro Parks Wilderness) of the CDT on the Cuba Ranger District will be connected in the life of this Plan.

Standards

1. Management of the CDT shall comply with the most recent version of the CDT Comprehensive Plan.
2. No surface occupancy for geothermal energy leasing activities shall occur within the CDT corridor.
3. No common variety mineral extraction (e.g. limestone, gravel, pumice) shall occur within the CDT corridor.
4. Motorized events and motorized special use permits shall not be permitted or authorized on the CDT.

Guidelines

1. To retain or promote the character for which the CDT was designated, new or relocated trail segments should be located primarily within settings consistent with or complementing Primitive or Semi-Primitive Non-Motorized Recreation Opportunity Spectrum classes. Road and motorized trail crossings and other signs of modern development should be avoided.
2. To protect or enhance the scenic qualities of the CDT, management activities should be consistent with, or make progress toward achieving, Scenic Integrity Objectives of High or Very High within the foreground of the trail (up to 0.5 mile either side).
3. The CDT corridor is consistent with a Primitive or Semi-Primitive Non-Motorized setting and may intermittently pass through more developed settings. The CDT provides for a continuous route through predominately undeveloped settings.
4. If management activities result in short-term impacts to the scenic character along the CDT, mitigation measures should be included (e.g., screening, feathering, and other scenery management techniques) to minimize visual impacts at key locations (e.g., vistas) within the trail corridor.
5. In order to promote a non-motorized setting, the CDT should not be permanently re-located onto routes open to motor vehicle use.
6. The minimum trail facilities necessary to accommodate the amount and types of use anticipated on any given segment along the CDT should be provided in order to protect resource values and for health and safety (not for the purpose of promoting user comfort) in order to preserve or promote a naturally appearing setting.
7. To protect the CDT's scenic values, special-use authorizations for new communication sites, utility corridors, and renewable energy sites should not be visually apparent within visible foreground (up to 0.5 miles).
8. Linear utilities and rights-of-way should be limited to a single crossing per special use authorization of the CDT unless additional crossings are documented as the only prudent and feasible alternative.
9. New temporary and permanent road or motorized trail construction across or adjacent to the CDT should be avoided unless necessary for resource protection, access to private lands, or to protect public health and safety.
10. Using the CDT for landings or as a temporary road should not be allowed. Hauling or skidding along the CDT itself should be allowed only when design criteria is used to minimize impacts to the trail infrastructure and:
 - a. Where the CDT is currently located on an open road, or
 - b. To address hazard tree removal, or
 - c. No other haul route or skid trail options are available.
11. Unplanned fires in the foreground (up to 0.5 mile) of the CDT should be managed using minimum impact suppression tactics or other tactics appropriate for the protection of CDT values. Prescribed fires in the foreground of the CDT should be managed to incorporate the values of the CDT. Heavy equipment fireline construction within the CDT corridor should not be allowed unless necessary for emergency protection of life and property.

Management Approaches

1. Work with volunteer groups, partners, local governments, and adjacent landowners to maintain CDT corridors, the condition and character of the surrounding landscape, and to facilitate CDT user support that promotes 'Leave No Trace' principles and reduces user-conflict.
2. Pursue designating approximately seven miles of existing trails in the San Pedro Parks Wilderness to connect existing sections of the CDT.
3. Ensure that Incident Management Teams are aware of the CDT as a resource to be protected during wildfire suppression activities. Clearly identify fire suppression rehabilitation and long-term recovery of the CDT corridor as high priorities for Incident Management Teams, BAER Teams, and post-fire rehabilitation interdisciplinary teams.
4. Establish appropriate visitor use levels for specific segments of the CDT and take appropriate actions if there is a trend away from the desired condition.
5. Evaluate proposed trail relocations or new trail segment locations to locate the CDT as close to the geographic Continental Divide as possible.
6. Identify and pursue opportunities to acquire lands or rights-of-way within or adjacent to the CDT as they become available.
7. Provide consistent signage along the CDT corridor at road crossings to adequately identify the CDT and include interpretation at trailheads.
8. Use side and connecting trails to access points of interest or supply points away from the CDT.
9. To protect the CDT's scenic values, consider no visibly apparent special-use authorizations for new communication sites, utility corridors, and renewable energy sites within the middleground viewshed (up to four miles).

16.7 National Recreation Trails

Description

The Forest has two National Recreation Trails; Winsor (22 miles) and Cañones Creek (6 miles long). These trails offer spectacular views and high quality recreation opportunities.

Desired Conditions

1. National Recreation Trails provide a variety of opportunities for non-motorized recreation and locations as well as a diversity of experiences with different components of solitude, remoteness, and development.
2. Conflicts among trail users are infrequent.

Guidelines

1. Management activities within foreground views (up to 0.5 mile) from the trail should meet a Scenic Integrity Objective of at least High.
2. Management activities in the middleground (up to four miles) and background (from middleground to horizon) should meet or exceed a Scenic Integrity Objective of at least Moderate.

3. Special use permits that affect National Recreation Trails should include scenery management considerations.
4. Management activities should maintain safe public access to National Recreation Trails.
5. National Recreation Trails should be consistent with management direction in the trail establishment reports as well as the maintenance standards for trail class and use.

Management Approaches

1. Work with volunteer groups, partners, local governments, and adjacent landowners:
 - a. To maintain trail corridors,
 - b. To maintain the condition and character of the surrounding landscape, and
 - c. To facilitate support by trail users that promote 'Leave No Trace' principles and reduces user-conflict.

16.8 Jemez National Recreation Area

Description

The Jemez National Recreation Area is 57,650 acres and received an estimated 1.6 million visitors each year. Recreational opportunities are diverse and there are outstanding scenic features within the JNRA. The area has recreational, ecological, cultural, religious, and wildlife values. National Recreation Areas are congressionally designated.

Desired Conditions

1. Visitor access, use, and management activities maintain the recreational, ecological, cultural, traditional, and wildlife resource values for which the Jemez National Recreation Area (JNRA) was designated.
2. Recreation opportunities support the needs and expectations of the diverse population in the surrounding area (e.g., urban visitors, rural residents, youth, people with disabilities, aging populations, and traditional and cultural users).

Standards

1. The area shall be managed consistent with the most recent version of the JNRA Management Plan.
2. Mineral extraction will not occur within the JNRA as it was withdrawn from all mineral entry.

Guidelines

1. Management practices should not threaten the recreational, ecological, cultural, traditional, and wildlife resource values for which the JNRA was designated.

Management Approaches

1. Work with volunteer groups, partners, local governments, and adjacent landowners:
 - a. To protect the condition and character of the surrounding landscape, and
 - b. To facilitate support that promote 'Leave No Trace' principles and reduce user-conflicts.

16.9 Scenic Byways

Description

Eight national scenic byways are within the Santa Fe National Forest; Route 66 pre-1937 alignment National Scenic Byway, El Camino Real National Scenic Byway, Jemez Mountain trail National Scenic Byway, Puye Cliffs Scenic Byway, Santa Fe National Forest Scenic Byway, Santa Fe Trail National Scenic Byway, The High Road to Taos Scenic Byway, and the Turquoise Trail.

Desired Conditions

1. Viewsheds from scenic byways are consistent with desired conditions for scenery and appear natural with only minimal evidence of human activities.
2. Scenic byways increase access to and appreciation of the forest while supporting rural community economic development.

Guidelines

1. Visual impacts from management activities and infrastructure should meet scenery objectives as identified on the Scenic Integrity Objective Map.
2. Management activities within the foreground (up to 1/2 mile on either side) should be consistent with the Scenic Integrity Objective of High.

Management Approaches

1. Work with the New Mexico Department of Transportation and county highway departments to manage hazard trees within the immediate foreground of scenic byways (up to 300 feet on either side).
2. Work with the New Mexico Department of Transportation, the Federal Highway Administration, and local communities to improve services and interpretive opportunities on byways.
3. Use signs, kiosks, exhibits, and other educational tools (e.g., brochures, auto tours, websites, and social media) to provide interpretive, education, and safety information along scenic byways, in adjacent recreation sites, and at visitor contact points (e.g., ranger stations).

17 Management Areas

Other management areas are being developed. Public input will be solicited in March 2017.

17.1 Oil and Gas Leasing Area

Description

This area is in the Northwest part of Forest as mapped in the EIS Oil and gas leasing project. Exploration and development will continue within the area analyzed in the 2008 Forest Plan Amendment under the appropriate regulations and stipulations. The stipulations to protect resources will be applied as described in the 2008 and 2012 oil and gas leasing Environmental Impact Statements (EISs).

Desired Conditions

1. Surface resource impacts resulting from oil and gas development do not have adverse long-term effects on ecosystem health or watershed conditions.
2. Reclamation of oil and gas extraction areas restores resource damage and removes public safety hazards.

Standards

1. The following timing limitations apply to drilling operations and construction activities. These do not apply to daily operation and maintenance of producing wells.
 - a. Prohibited during the Mexican Spotted Owl's critical nesting and breeding period (between March 1 and August 31) to ensure reproductive and post-fledgling success within Mexican Spotted Owl Protected Activity Centers. An exception, modification, or waiver to the timing limitation may be granted if surveys according to protocol are conducted and the area is not used for nesting. A public notice and comment period is required prior to waiver, exception, or modification waiver of this stipulation.
 - b. Prohibited during the Northern Goshawk's critical nesting and breeding period (between March 1 and September 30) to ensure reproductive and post-fledgling success within Northern Goshawk nesting Post-Fledgling Area. An exception, modification, or waiver to the timing limitation may be granted if Northern Goshawk surveys show that the area is not used for nesting.
 - c. Prohibited during the Peregrine Falcon's critical nesting and breeding period (between March 1 and August 15) to ensure reproductive and post-fledgling success within designated Peregrine Falcon eyries. An exception, modification or waiver to the timing limitation may be granted if surveys show that the area is not used for nesting.
 - d. Prohibited in the deer and elk winter range along the northwest edge of the oil-gas study area (between December 15 and March 15). An exception, modification, or waiver to the timing limitation may be granted if the operator demonstrates that the drilling and construction location would not disrupt deer and elk winter habitat.
 - e. Prohibited during the critical deer fawning and elk calving period (between June 1 and July 31) to minimize risks to herd reproduction within important deer fawning and elk calving area within an area in the southern portion of the oil-gas study area which has been identified as important to the success of deer fawning and elk calving. An exception, modification, or waiver to the timing limitation may be granted if the operator

demonstrates that the drilling and construction location would not disrupt deer fawning and elk calving.

- f. To protect and limit disturbances from drilling activities to at-risk species and other critical wildlife habitat areas, timing restrictions outlined in current and future federal recovery plans or forest-defined Protected Activity Centers must be followed.

Guidelines

2. No surface occupancy should be allowed in the following areas:
 - a. Generally narrow areas consisting of slopes of 40 percent or greater that have high erosion and mass wasting potential. An exception, modification, or waiver may be granted if onsite inspection shows that unstable or steep slopes do not exist on the specific site, or if the operator can demonstrate in a surface use plan of operations that adverse effects can be minimized and activities safely conducted without loss of long-term site productivity. A public notice and comment period is required prior to waiver, exception, or modification waiver of this stipulation.
 - b. Inventoried Roadless Areas. An exception, modification, or waiver may be granted if the Forest Plan designation changes so that the area is no longer classified as Semi-Primitive Non-Motorized (ROS), or if the operator can demonstrate in a surface use plan of operations that the activity can be conducted with minimal impacts on the Semi-Primitive Non-Motorized characteristics within a site-specific locale. A public notice and comment period is required prior to waiver, exception, or modification waiver of this stipulation.
 - c. Designated areas encompassing and surrounding Nogales Cliff House (110 acres) and Rattlesnake Ridge (90 acres). An exception, modification, or waiver may be granted if a site-specific surface use plan of operations demonstrates that adverse impacts to the cultural resources can be completely avoided, and clearance is obtained from the forest archeologist and State Historic Preservation Officer. A public notice and comment period is required prior to waiver, exception, or modification waiver of this stipulation.
 - d. Within a 1-mile protection zone for New Mexico Office of the State Engineer recognized drinking water sources. An exception or modification may be granted if the operator's surface and subsurface hydrology studies and mitigation plans were to show that there is no reasonable risk to the quality or quantity at a water source. Roads and power lines may cross a water source protection zone if the operator can demonstrate that it would have less environmental impact than other routes and that adverse effects could be minimized.
3. To avoid adverse impacts to riparian and wetland resources, access roads and pipelines should not be located in riparian TEUs (or equivalent survey system) or where vegetation data indicates riparian or wetland conditions unless there are no practical alternative locations and they are located and designed to minimize adverse impacts to riparian or wetland resources.
4. Within visual quality retention area (as shown on the map x), surface disturbance activities should be located and designed to protect visual quality or to reclaim disturbed areas to meet the visual quality within three years from project startup.
5. Well pads, roads, or other surface disturbance activities that would impact highly valued cultural resources should be avoided or minimized. An exception, modification, or waiver may be granted if a site-specific surface use plan of operations demonstrates that adverse impacts to the cultural resources can be completely avoided and clearance is obtained from the forest archeologist and State Historic Preservation Officer. A public notice and comment period is required prior to waiver, exception, or modification waiver of this stipulation.

17.2 Geothermal Energy Leasing Area

The potential for this area is currently being analyzed as part of the Geothermal Energy Leasing Area EIS. A management area and associated plan components may be developed as appropriate depending on the decision.

Draft